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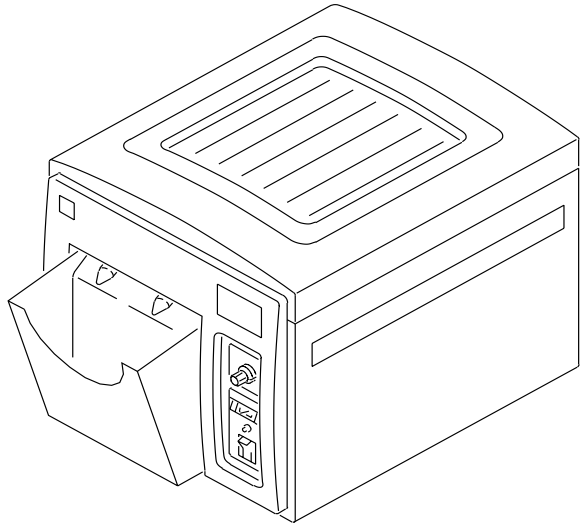
29OCT99

HEALTH IMAGING

ADJUSTMENTS AND REPLACEMENTS
for the
Kodak Min-R MAMMOGRAPHY PROCESSOR
Service Code: 3752

Important
Use qualified personnel to service this equipment.



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Warning

To avoid hazardous conditions, keep floors and floor coverings around your PROCESSOR and associated drains clean and dry at all times. Any accumulation of fluids from mixing tanks, drain lines, etc., should be cleaned up immediately. In the event of an accumulation of liquid due to backup, overflow, or other malfunctions of the drain associated with your PROCESSOR, call a plumber or other contractor to correct any problem with the drain. Kodak accepts no responsibility or liability whatsoever for the serviceability of any drain connected to or associated with a PROCESSOR. Such drains are the sole responsibility of the customer.

Radio Interference

Caution

This equipment generates, uses, and can radiate radio-frequency energy. If the equipment is not installed and used according to the instructions, it might cause interference to radio communications. The equipment has been tested and found to comply with the limits for a *Class A* computing device pursuant to Subpart J of Part 15 of the FCC Rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at the user's own expense, will be required to take whatever measures might be required to correct the interference.

This digital apparatus does not exceed the *Class A* limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

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Section 1: General Information

Electrostatic Discharge

Electrostatic discharge (ESD) is a primary source of:

- product downtime
- low productivity
- repairs

While you cannot feel a static charge of less than 3,500 volts, as few as 30 volts can damage or destroy essential components in electronic equipment.

Preventive Measures

- Always look for an ESD warning label before doing any procedure involving static-sensitive components such as BOARDS. All static-sensitive components are marked with bright graphic labels which frequently include instructions. Follow all label instructions.
- Wear a GROUNDING STRAP when handling static-sensitive components. Always be sure that the CLIP remains fastened to a correctly grounded, not painted or contaminated surface.
- Repair static-sensitive components at an ESD-protected work station or use a portable GROUNDING MAT. For help in setting up an ESD-protected work station, contact your Kodak representative.
- When moving static-sensitive components from one area to another, insert and transport the components in ESD-protective packaging.

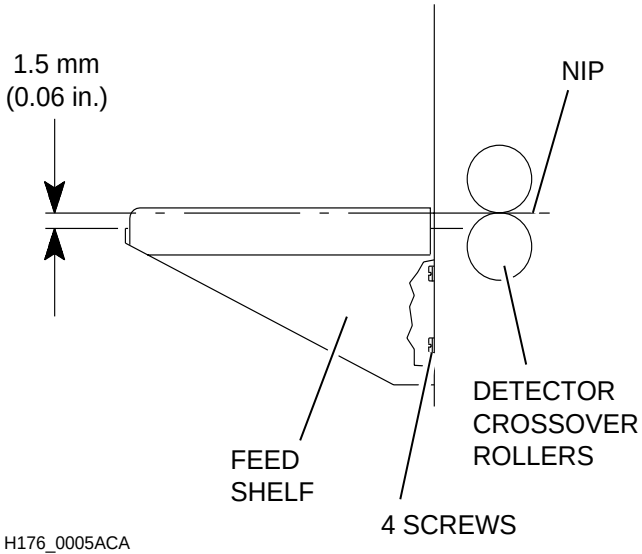
Special Tools

- SEALANT TL-3230
- POTENTIOMETER ADJUSTING TOOL TL-1481

Section 2: Adjustments and Replacements

FEED SHELF

Adjustment



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[1] Loosen the 4 SCREWS.

[2] Adjust the height of the FEED SHELF to 1.5 mm (1⁄16 in.) below the NIP of the DETECTOR CROSSOVER ROLLERS.

[3] Tighten the 4 SCREWS.

DETECTOR SWITCH

Adjustment

Warning
Moving parts.

[1] Remove the TOP COVER.

Warning
Dangerous Voltage

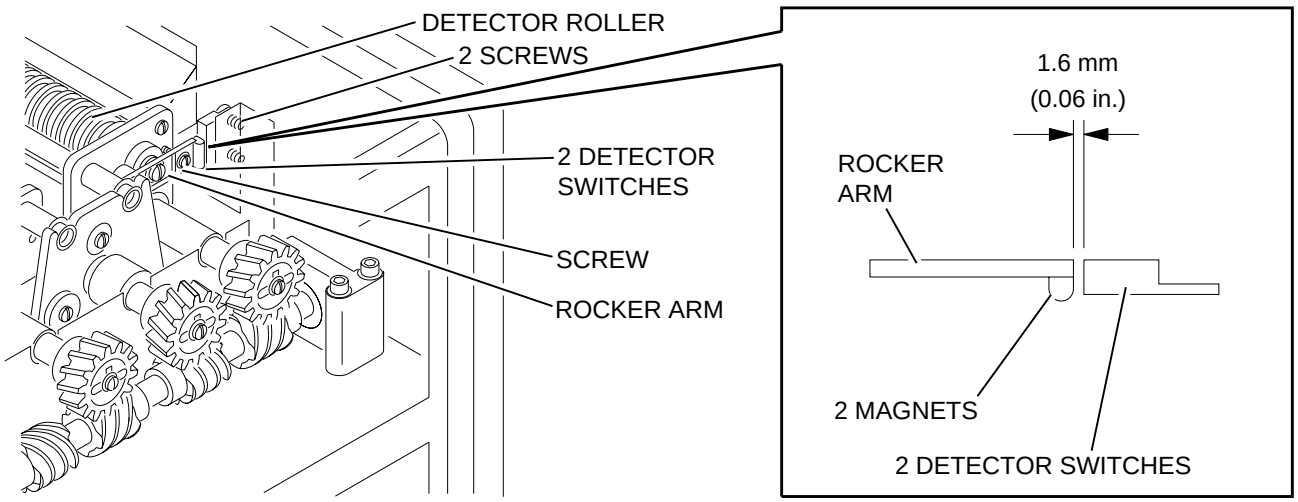
[2] De-energize the PROCESSOR.

[3] Check for squareness:

- DEVELOPER RACK - see Page 9
- DETECTOR CROSSOVER ASSEMBLY - see Page 8

[4] Install:

- DEVELOPER RACK
- DETECTOR CROSSOVER ASSEMBLY



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[5] Loosen the 2 SCREWS on the 2 DETECTOR SWITCHES.

[6] Move the 2 DETECTOR SWITCHES up to the top position.

[7] Set the distance between the MAGNET and the DETECTOR SWITCH on the drive side to 1.6 mm (0.06 in.):

- **(a)** Loosen the SCREW.
- **(b)** Move the ROCKER ARM.
- **(c)** Tighten the SCREW.

Warning

Dangerous Voltage

[8] Energize the PROCESSOR.

[9] Lift the top DETECTOR ROLLER.

[10] Insert a 2.54 cm (1 in.) section of film into the drive side of the DETECTOR ROLLER.

[11] Slowly move the DETECTOR SWITCH on the drive side down until the REPLENISHMENT PUMP actuates.

[12] Tighten the 2 SCREWS on the DETECTOR SWITCH.

[13] Check that the REPLENISHMENT PUMP stops in 3 seconds after you remove the film.

Note

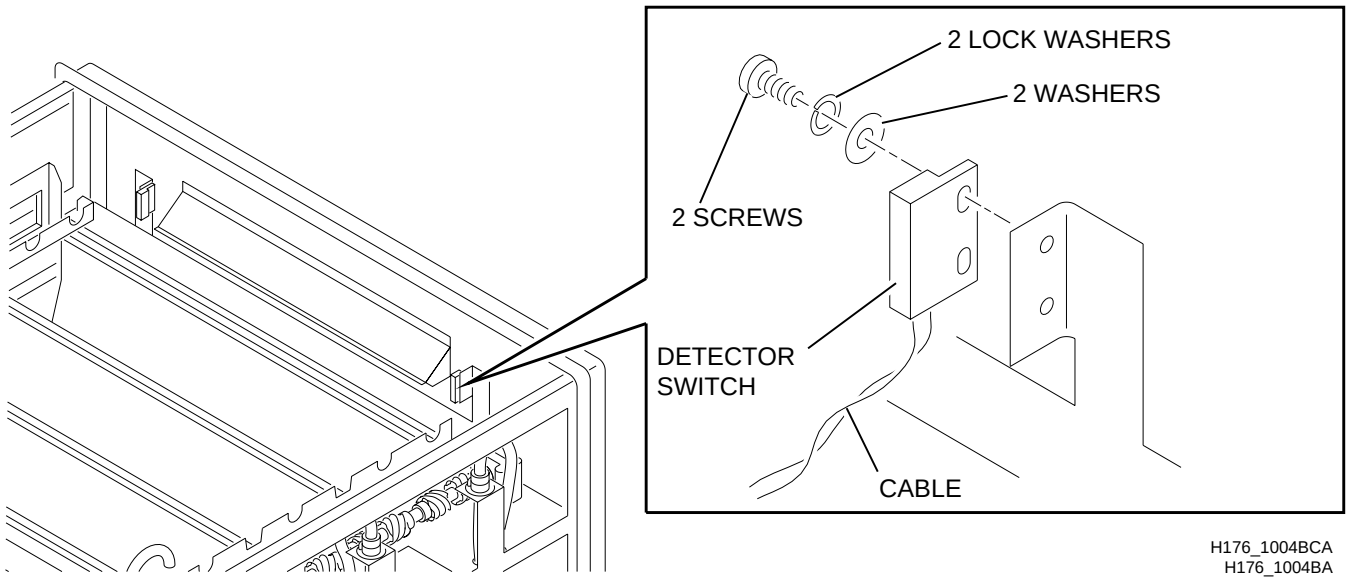
The feed signal will emit a beep.

[14] Do Step 9 -Step 13 again for the DETECTOR SWITCH on the nondrive side.

[15] Install the TOP COVER.

[16] Check that the REPLENISHMENT PUMP does not operate until you feed film.

Replacement



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Warning
Dangerous Voltage

[1] De-energize and disconnect the main power.

[2] Remove:

- TOP COVER
- 2 SCREWS
- 2 LOCK WASHERS
- 2 WASHERS
- DETECTOR SWITCHES

ESD
Possible damage from electrostatic discharge.

[3] Disconnect the CABLE.

[4] Connect the new CABLE.

[5] Install:

- DETECTOR SWITCHES
- 2 WASHERS
- 2 LOCK WASHERS
- 2 SCREWS
- TOP COVER

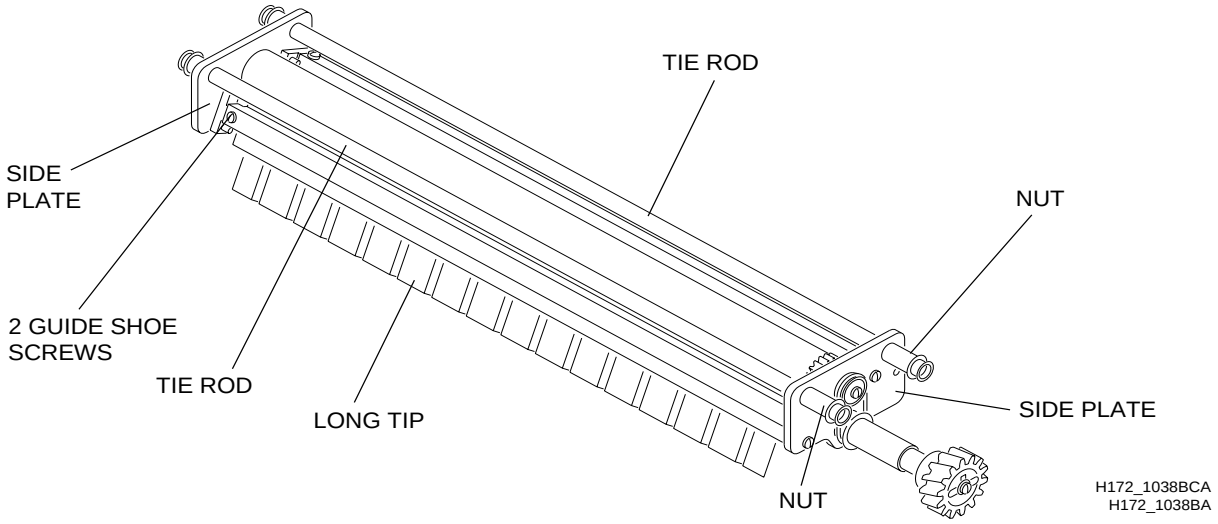
Warning
Dangerous Voltage

[6] Energize and connect the main power.

[7] Do the adjustment procedure for the DETECTOR SWITCHES. See Page 5.

CROSSOVER ASSEMBLIES

Adjustment for Squareness



[1] Remove the CROSSOVER ASSEMBLY.

[2] Place the CROSSOVER ASSEMBLY on a smooth flat surface with the GUIDE SHOES up.

Note

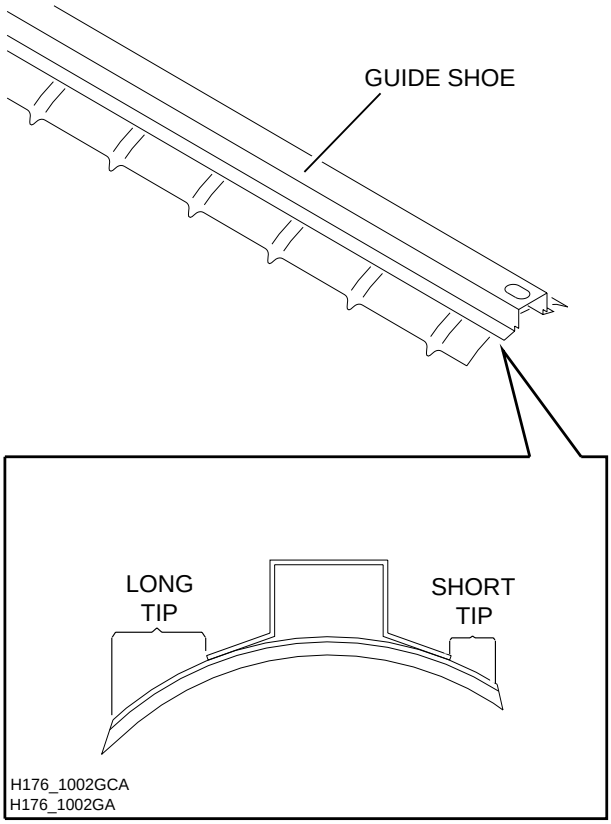
The DETECTOR CROSSOVER ASSEMBLY does not have a GUIDE SHOE.

[3] Loosen the 4 NUTS on the TIE RODS.

[4] Press down on the SIDE PLATES to make the SIDE PLATES have uniform contact with the flat surface.

[5] Tighten the 4 NUTS.

Installing a GUIDE SHOE



[1] Remove:

- 2 GUIDE SHOE SCREWS
- GUIDE SHOE

[2] Install:

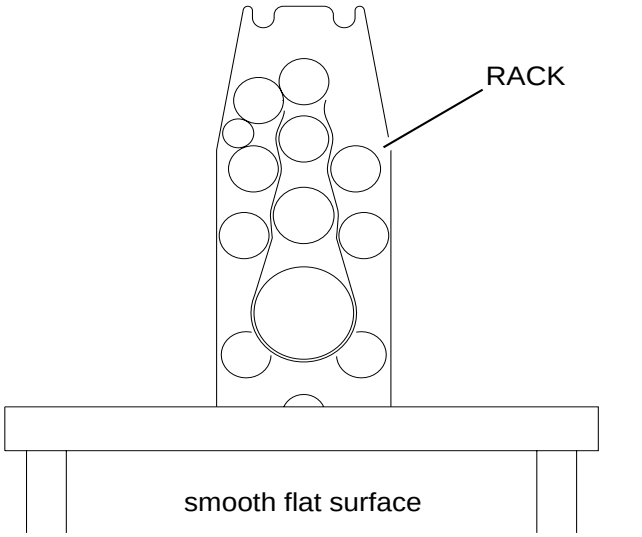
- new GUIDE SHOE with the LONG TIPS in the direction of film transport
- 2 GUIDE SHOE SCREWS

Note

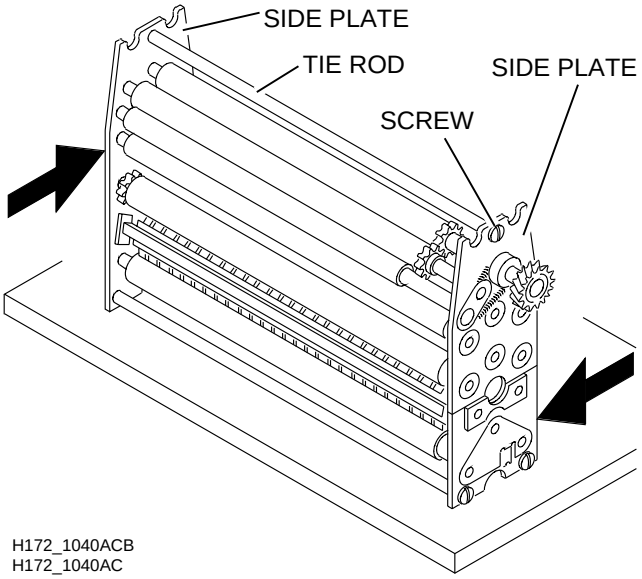
There are no adjustment procedures for the GUIDE SHOES.

RACKS - Adjustments

Squareness - DEVELOPER, FIXER and WASH



[1] Remove and place the RACK on a smooth flat surface.



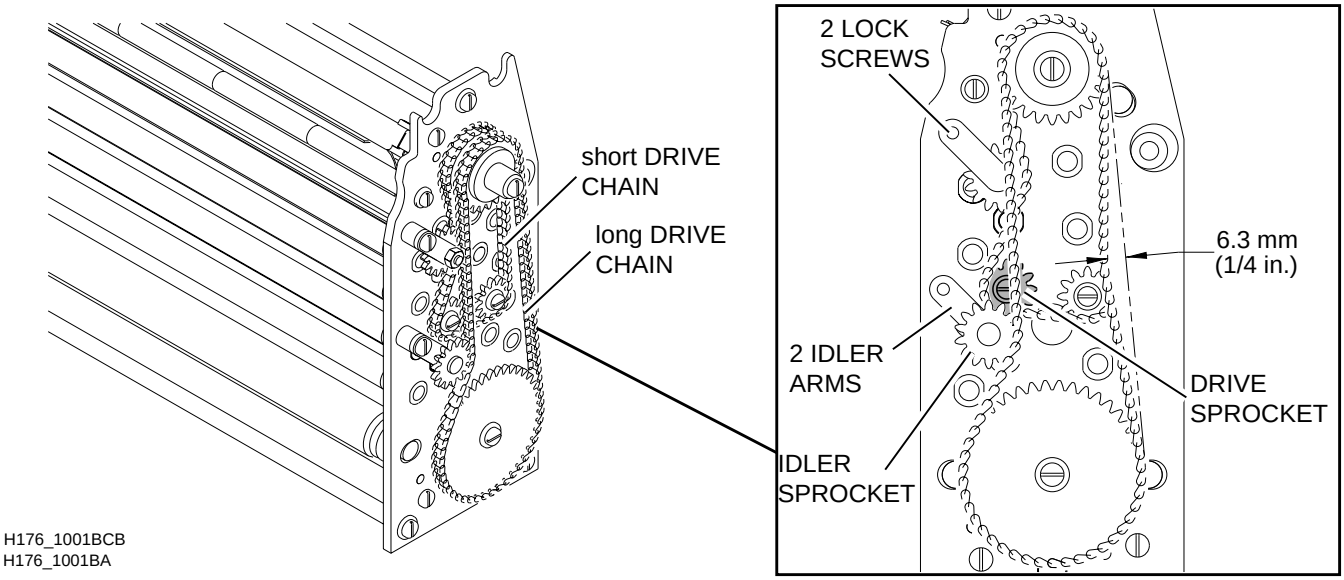
[2] Loosen the SCREWS on the TIE RODS.

[3] Check that the SIDE PLATES are flat on the surface.

[4] If necessary, apply pressure to the SIDE PLATES.

[5] Tighten the SCREWS.

Tension of the DRIVE CHAIN - DEVELOPER RACK



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[1] Loosen the 2 LOCK SCREWS approximately 1/2 rotation.

[2] Adjust the long DRIVE CHAIN:

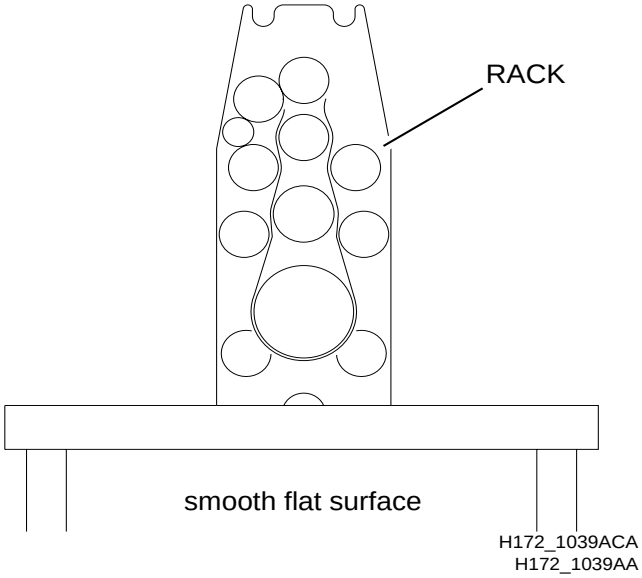
- **(a)** Rotate the lower IDLER ARM to move the IDLER SPROCKET toward the DRIVE CHAIN until there is approximately 6.3 mm (1/4 in.) play in the DRIVE CHAIN.
- **(b)** Check that the IDLER SPROCKET does **not** make contact with the DRIVE SPROCKET.
- **(c)** Tighten the lower LOCK SCREW.

[3] Adjust the short DRIVE CHAIN:

- **(a)** Rotate the upper IDLER ARM to move the IDLER SPROCKET toward the DRIVE CHAIN until there is approximately 6.3 mm (1/4 in.) play in the DRIVE CHAIN.
- **(b)** Check that the IDLER SPROCKET does **not** make contact with the long DRIVE CHAIN.
- **(c)** Tighten the upper LOCK SCREW.

[4] Check for smooth operation of the DEVELOPER RACK.

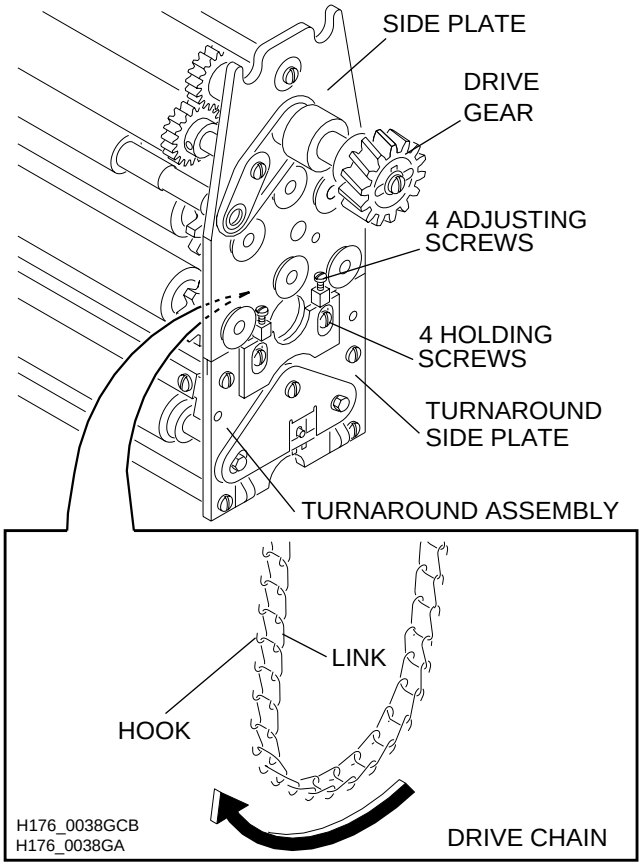
Tension of the DRIVE CHAIN - FIXER and WASH RACKS



[1] Check:

- solution is on the DRIVE CHAIN
- RACK is approximately the same temperature as the solution

[2] Remove and place the RACK on a smooth flat surface.



[3] Loosen the 4 HOLDING SCREWS.

[4] On the drive side, loosen the 2 ADJUSTING SCREWS until the SCREWS do not touch the TURNAROUND SIDE PLATE.

[5] Lift the RACK and allow the weight of the TURNAROUND ASSEMBLY to tighten the DRIVE CHAIN.

[6] Manually rotate the DRIVE GEAR one full rotation.

[7] Tighten:

- 2 HOLDING SCREWS on the drive side
- 2 ADJUSTING SCREWS on the drive side until the SCREWS touch the SIDE PLATE of the TURNAROUND ASSEMBLY

[8] Observe the distance between the SIDE PLATE and the TURNAROUND SIDE PLATE on the drive side.

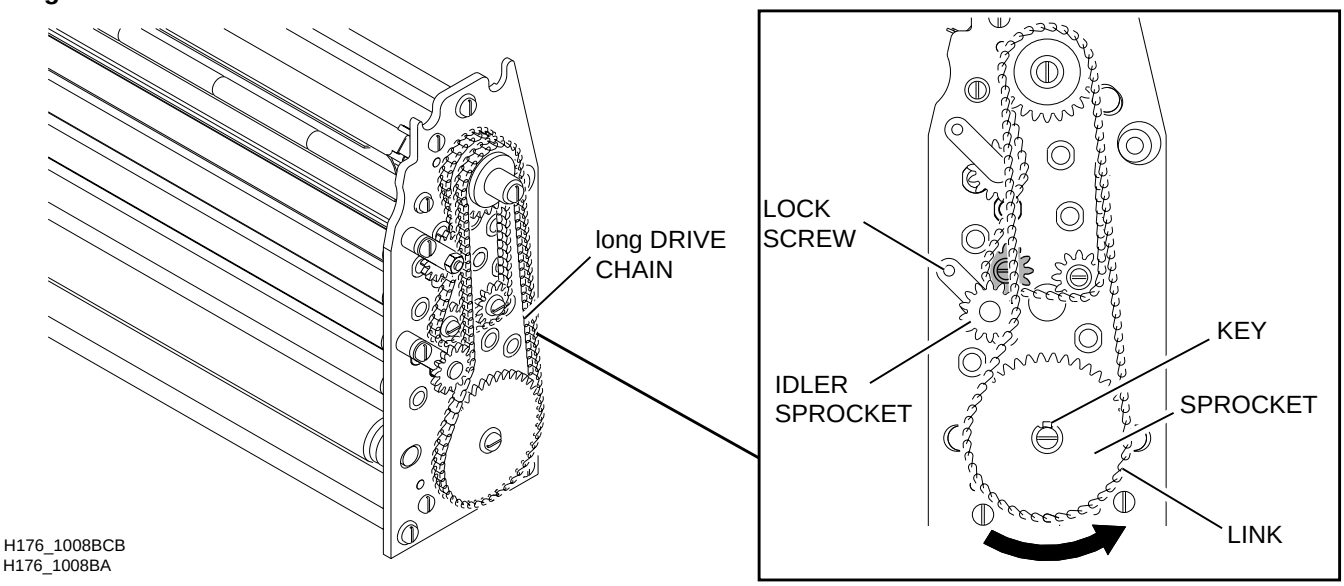
[9] Rotate the 2 ADJUSTING SCREWS on the nondrive side until the distance between the SIDE PLATES is the same as the drive side.

[10] Tighten the 2 HOLDING SCREWS on the nondrive side.

RACKS - Replacements

DRIVE CHAIN - DEVELOPER RACK

Long DRIVE CHAIN



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[1] Loosen the lower LOCK SCREW approximately 1/2 rotation.

[2] Move the lower IDLER SPROCKET away from the DRIVE CHAIN.

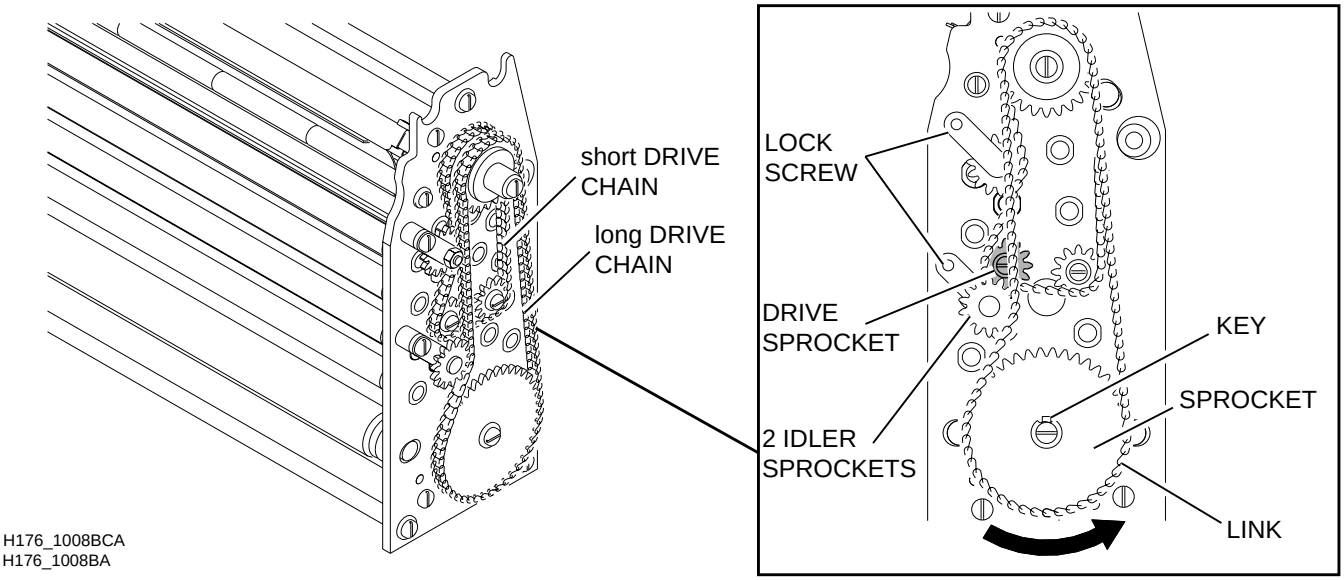
[3] Rotate the SPROCKET until the KEY is in the up position.

[4] Remove the SPROCKET and DRIVE CHAIN together.

[5] Install the new DRIVE CHAIN with the LINKS in the correct direction.

[6] Adjust the tension of the DRIVE CHAIN. See the procedure “Tension of the DRIVE CHAIN - DEVELOPER RACK” on Page 10.

Short DRIVE CHAIN



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[1] Loosen both LOCK SCREWS approximately 1/2 rotation.

[2] Move both IDLER SPROCKETS away from the DRIVE CHAINS.

[3] Rotate the bottom SPROCKET until the KEY is in the up position.

[4] Remove:

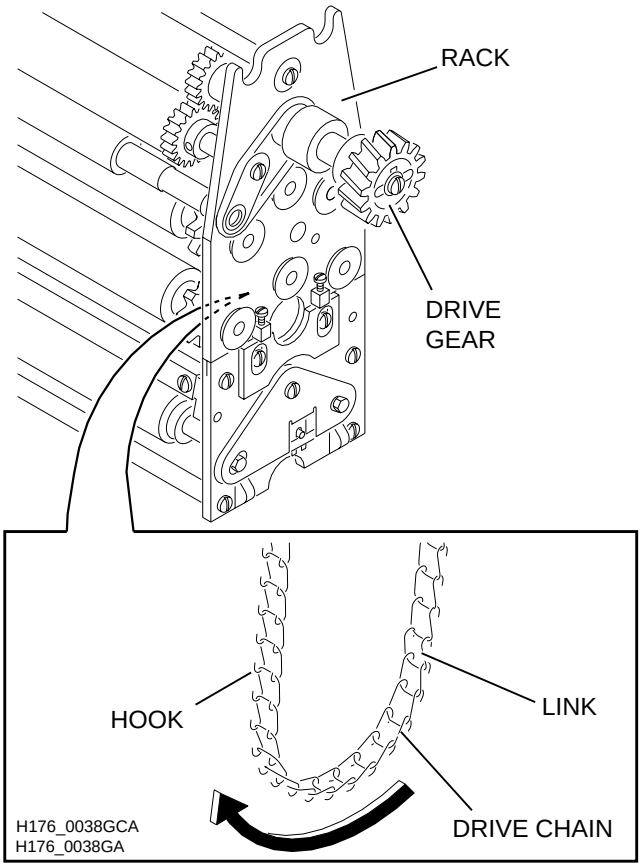
- bottom SPROCKET and long DRIVE CHAIN together
- DRIVE SPROCKET and short DRIVE CHAIN together

[5] Install:

- new short DRIVE CHAIN with the LINKS in the correct direction
- long DRIVE CHAIN with the LINKS in the correct direction

[6] Adjust the tension of the DRIVE CHAIN. See the procedure “Tension of the DRIVE CHAIN - DEVELOPER RACK” on Page 10.

DRIVE CHAIN - FIXER and WASH RACKS



[1] Use a SCREWDRIVER to pry open the HOOKS of a LINK.

[2] Connect the new DRIVE CHAIN to the old DRIVE CHAIN.

[3] Check that the HOOKS and LINKS are in the correct direction.

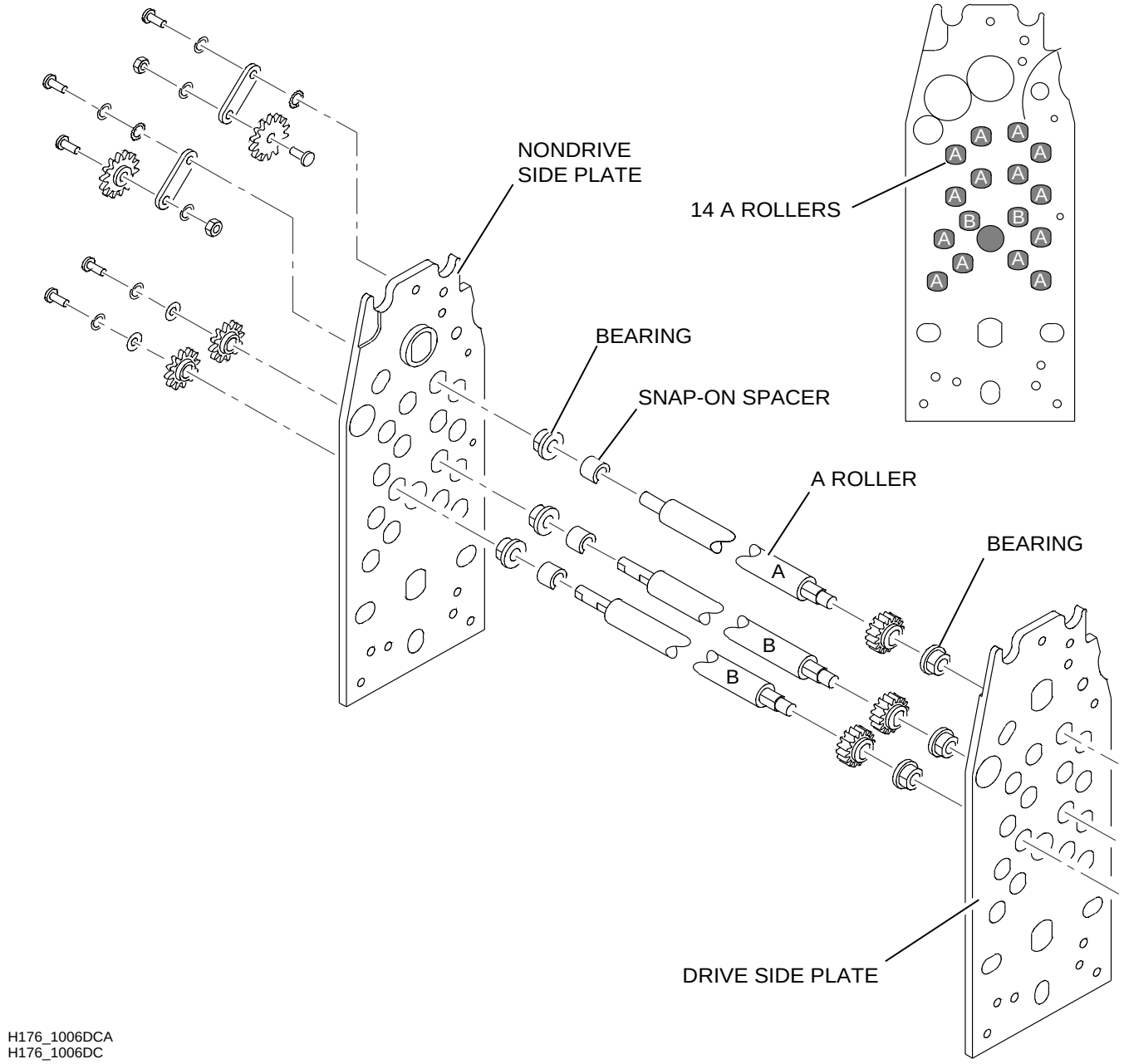
[4] Pull the old DRIVE CHAIN through the RACK until the new DRIVE CHAIN is in the correct position.

[5] Remove the old DRIVE CHAIN.

[6] Connect the ends of the new DRIVE CHAIN.

[7] Adjust the tension of the DRIVE CHAIN. See the procedure “Tension of the DRIVE CHAIN - FIXER and WASH RACKS” on Page 11.

A ROLLERS - DEVELOPER RACK



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Important

It might be necessary to remove:

- 1 or more other ROLLERS to access the A ROLLER
- hardware from the **outside** of the NONDRIVE SIDE PLATE for the ROLLER being removed

[1] Remove the plastic SNAP-ON SPACER for the ROLLER being removed.

[2] Move the A ROLLER toward the nondrive side until the A ROLLER disengages from the BEARING in the DRIVE SIDE PLATE.

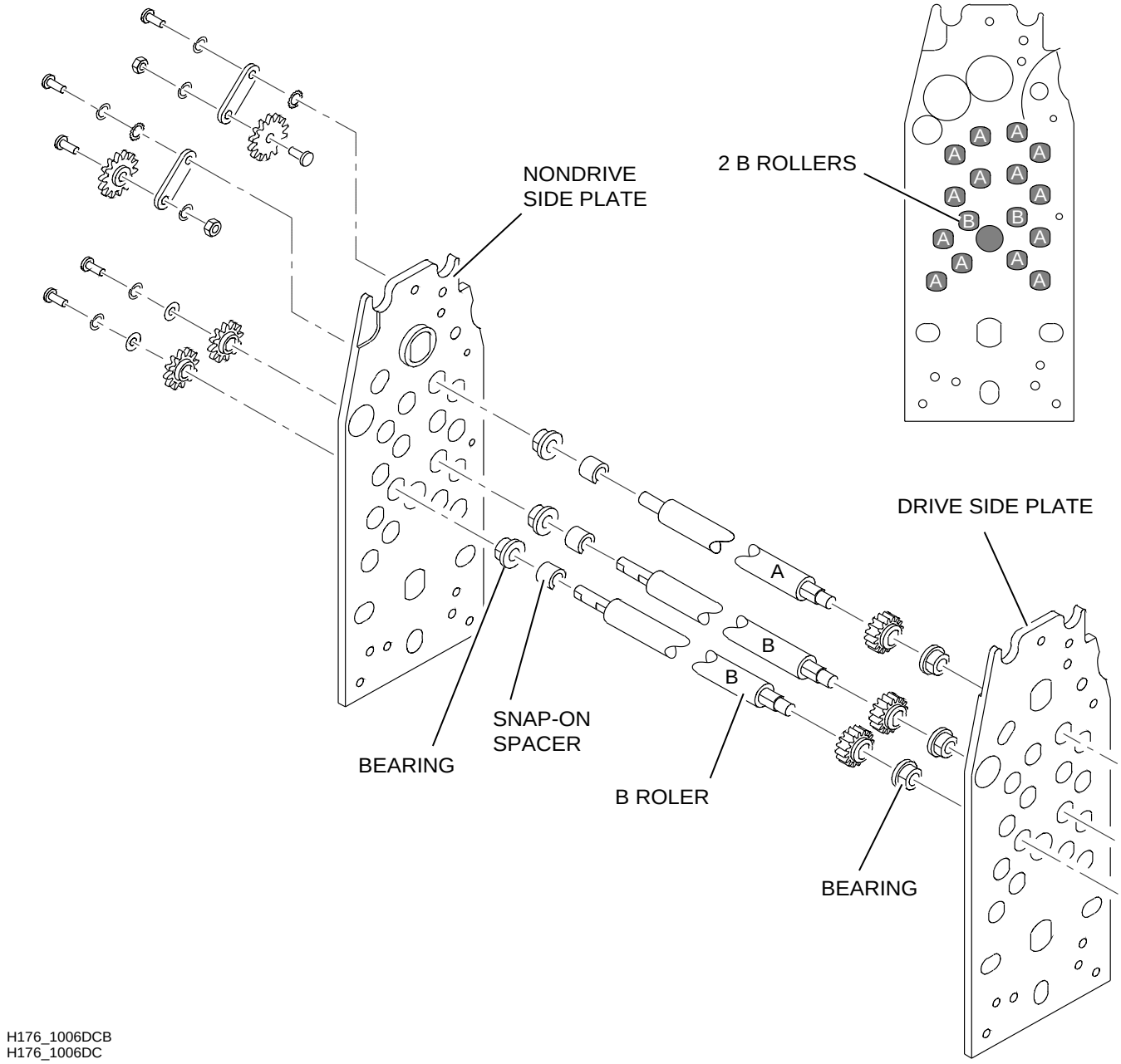
[3] Remove the A ROLLER and the BEARING together from the NONDRIVE SIDE PLATE.

[4] Install the BEARING on the nondrive side of the new A ROLLER.

[5] Reverse the steps of the removal procedure to install the new A ROLLER.

[6] If the hardware was removed from the **outside** of the NONDRIVE SIDE PLATE, do the adjustment procedure on Page 10.

B ROLLERS - DEVELOPER RACK



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[1] Do Step 1 - Step 4 of the removal procedure for the “Short DRIVE CHAIN”. See Page 13.

[2] Remove:

- plastic SNAP-ON SPACER for the ROLLER being removed
- any other ROLLERS to access the B ROLLER

[3] Move the B ROLLER toward the nondrive side until the B ROLLER disengages from the BEARING in the DRIVE SIDE PLATE.

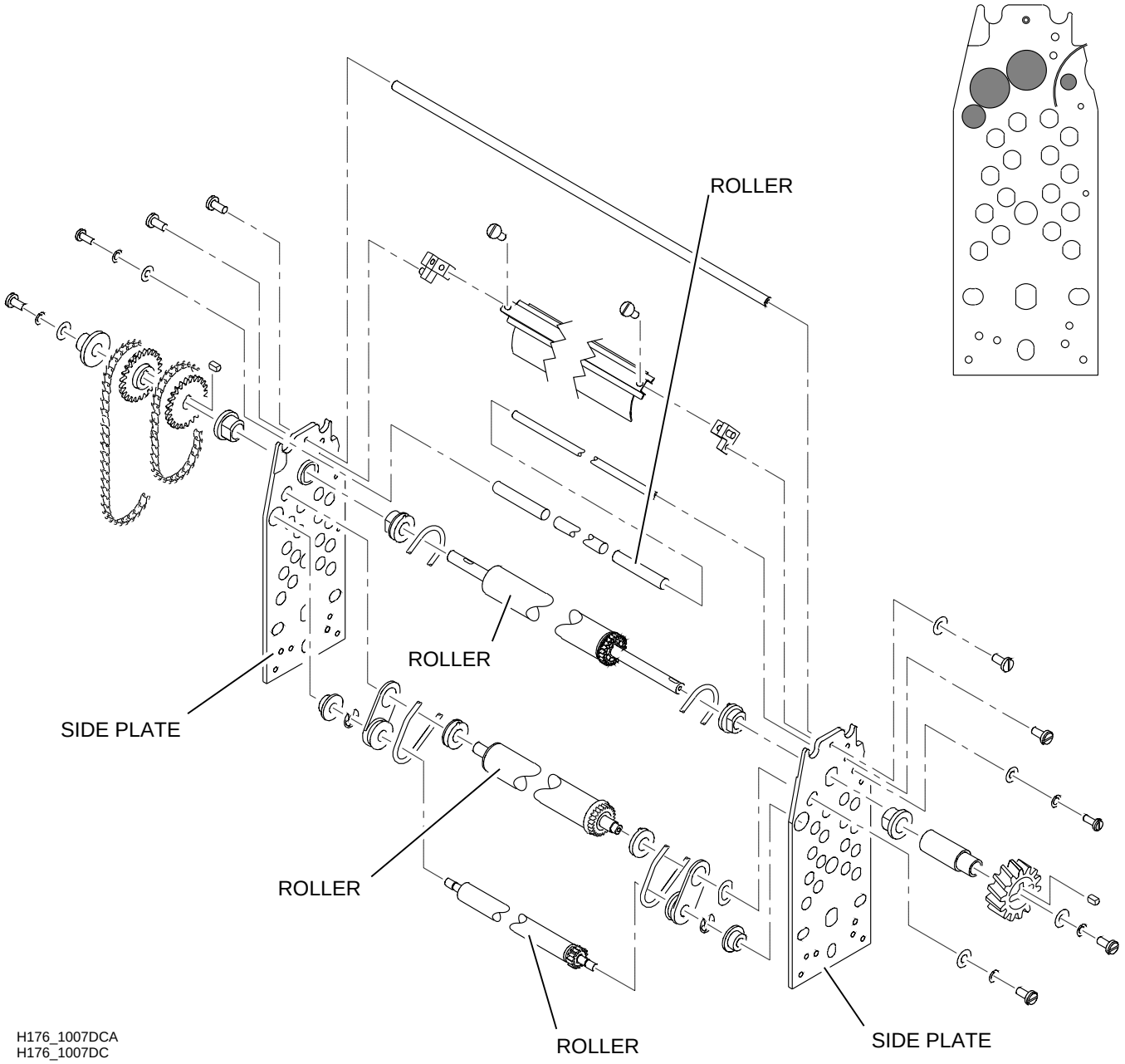
[4] Remove the B ROLLER and the BEARING together from the NONDRIVE SIDE PLATE.

[5] Install the BEARING on the nondrive side of the new B ROLLER.

[6] Reverse the steps of the removal procedure to install the new B ROLLER.

[7] Do the adjustment procedure for the DRIVE CHAIN. See Page 10.

Top ROLLERS - DEVELOPER RACK



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[1] Remove:

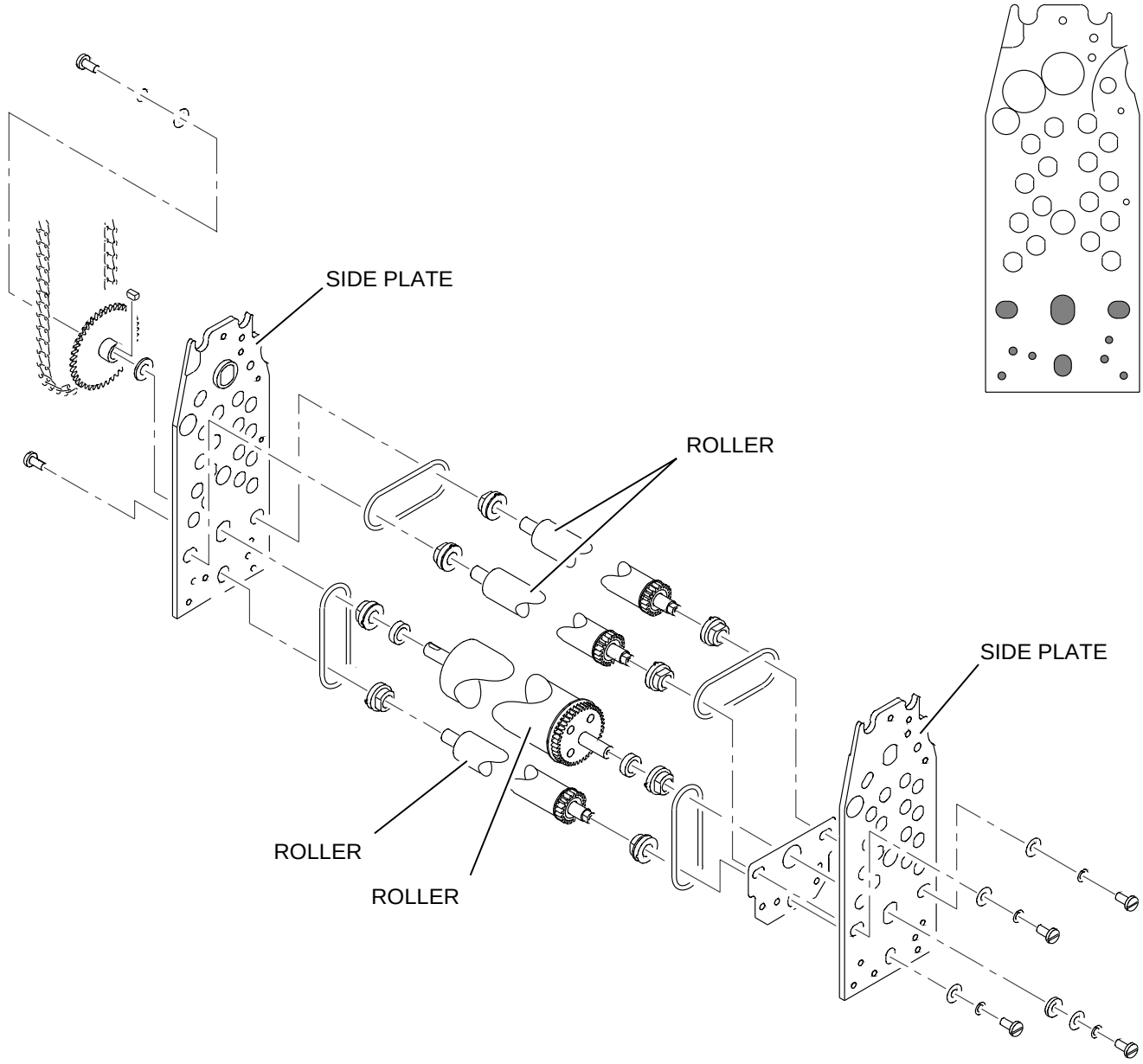
- hardware from the **outside** of the SIDE PLATES for the ROLLER being removed
- top ROLLER

[2] Install:

- new top ROLLER
- hardware from the **outside** of the SIDE PLATES

[3] Do the adjustment procedure for the DRIVE CHAIN. See Page 10.

Bottom ROLLERS - DEVELOPER RACK



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[1] Remove:

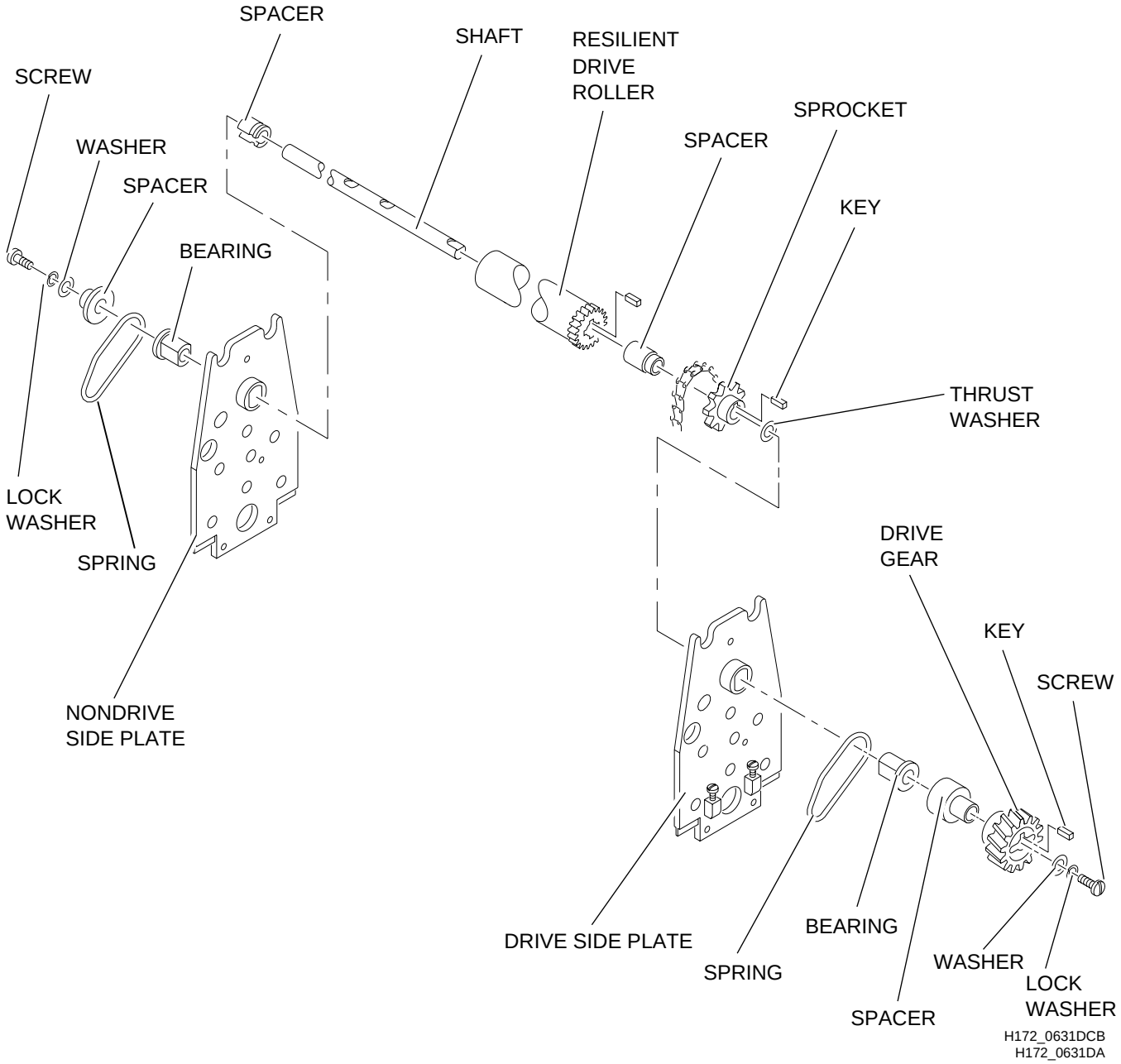
- hardware from the **outside** of the SIDE PLATES for the ROLLER being removed
- bottom ROLLER

[2] Install:

- new bottom ROLLER
- hardware from the **outside** of the SIDE PLATES

[3] Do the adjustment procedure for the DRIVE CHAIN. See Page 10.

RESILIENT DRIVE ROLLER - FIXER RACK



[1] Remove from the 2 ends of the RESILIENT DRIVE ROLLER, all hardware **outside** of the SIDE PLATES.

[2] Rotate the flat part of the SHAFT to the up position.

[3] Move:

- RESILIENT DRIVE ROLLER toward the nondrive side and remove the KEY from the DRIVE GEAR
- SHAFT of the RESILIENT DRIVE ROLLER toward the drive side

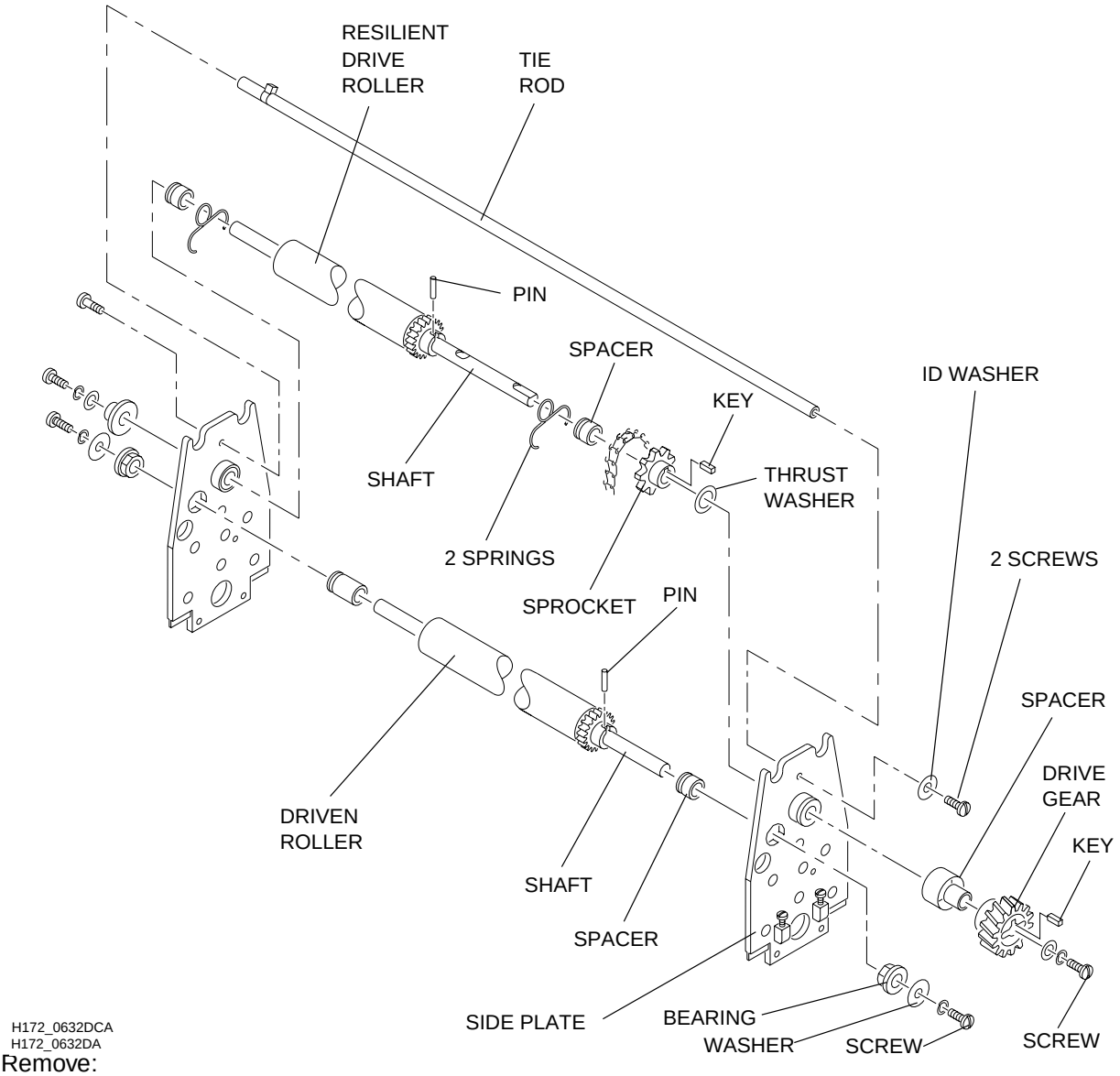
[4] Remove:

- THRUST WASHER
- SPROCKET
- SPACER

[5] Remove the RESILIENT DRIVE ROLLER.

[6] Reverse the steps for the removal procedure to install a new RESILIENT DRIVE ROLLER.

RESILIENT DRIVE ROLLER and DRIVEN ROLLER - WASH RACK



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[1] Remove:

- 2 SCREWS from the TIE ROD
- ID WASHER from the TIE ROD
- from the 2 ends of the RESILIENT DRIVE ROLLER and DRIVEN ROLLER, all hardware **outside** of the SIDE PLATES

[2] Rotate the flat part of the SHAFT to the up position.

[3] Remove the 2 SPRINGS.

[4] Move the 2 SHAFTS of the RESILIENT DRIVE ROLLER and the DRIVEN ROLLER toward the SIDE PLATE on the nondrive side.

[5] Bend the SIDE PLATE a small distance and remove the ends of the 2 SHAFTS.

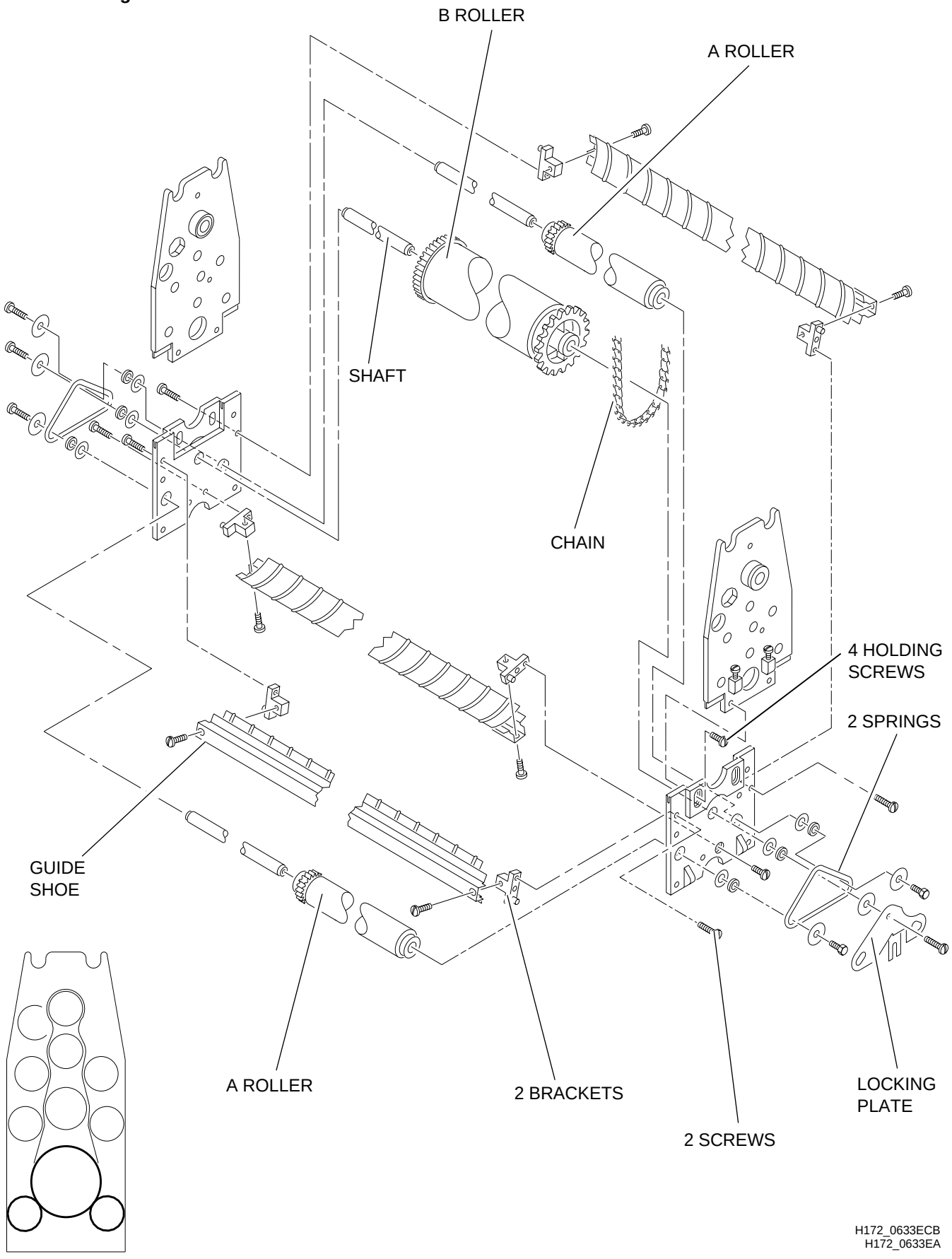
[6] Remove:

- THRUST WASHER
- SPROCKET
- SPACER

[7] Reverse the steps of the removal procedure to install a new RESILIENT DRIVE ROLLER and DRIVEN ROLLER.

TURNAROUND ASSEMBLY

Disassembling



[1] Remove:

- GUIDE SHOE
- 2 BRACKETS
- 2 SPRINGS
- LOCKING PLATE
- 2 A ROLLERS

[2] Pull the SHAFT from the B ROLLER from the nondrive side.

[3] Remove:

- 4 HOLDING SCREWS
- CHAIN from the B ROLLER
- TURNAROUND ASSEMBLY

B ROLLER

[1] Remove:

- TURNAROUND ASSEMBLY
- 2 SPRINGS
- LOCKING PLATE
- 2 A ROLLERS
- 2 SCREWS
- 2 BRACKETS
- GUIDE SHOE
- SHAFT from the B ROLLER
- B ROLLER

Important

The GUIDE SHOE must be installed with the LONG TIPS in the direction of film transport. See the procedure on Page 8.

[2] Reverse the steps to install a new B ROLLER.

A ROLLERS

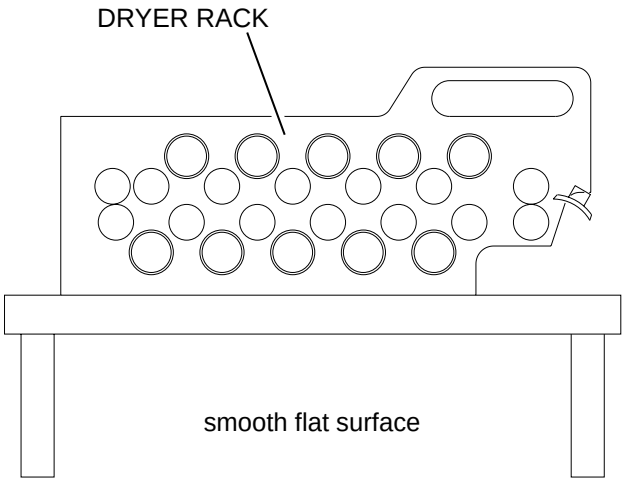
[1] Remove:

- 2 SPRINGS
- LOCKING PLATE
- SCREW
- A ROLLER from the SHAFT
- A ROLLER in the TURNAROUND ASSEMBLY

[2] Reverse the steps to install new A ROLLERS.

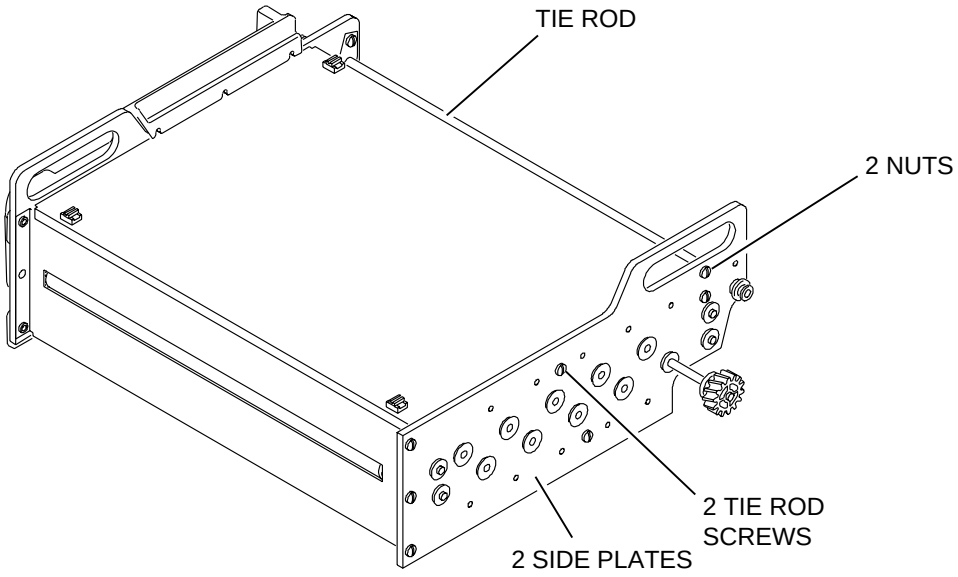
DRYER RACK

Adjusting the Squareness



[1] Remove and place the DRYER RACK on a smooth flat surface.

H172_1042ACA
H172_1042AA



H176_0514BCA
H176_0514BC

[2] Loosen from the TIE ROD:

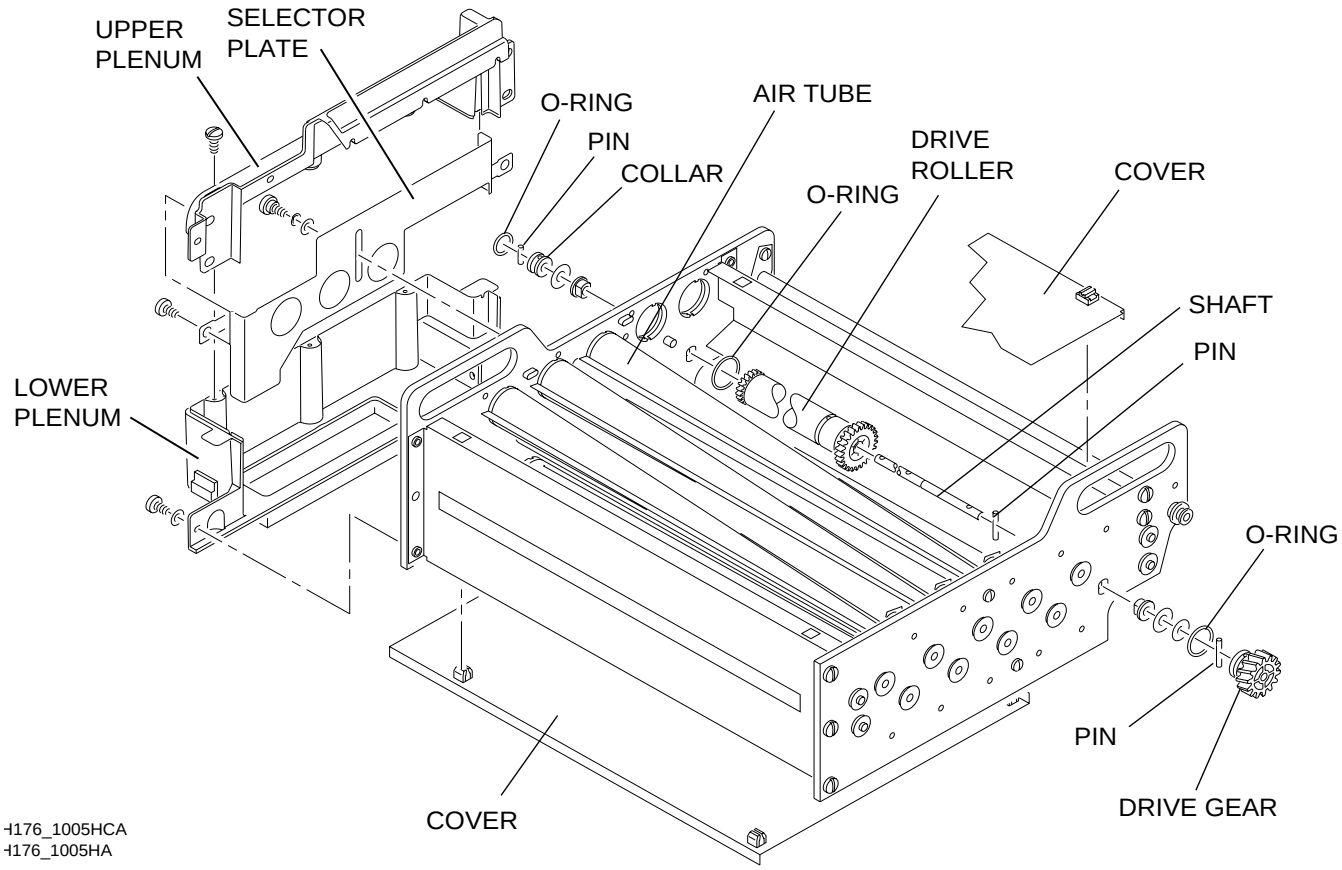
- 2 TIE ROD SCREWS
- 2 NUTS

[3] Press down on the 2 SIDE PLATES to make uniform contact with the flat surface.

[4] Tighten:

- 2 TIE ROD SCREWS
- 2 NUTS

DRIVE ROLLER



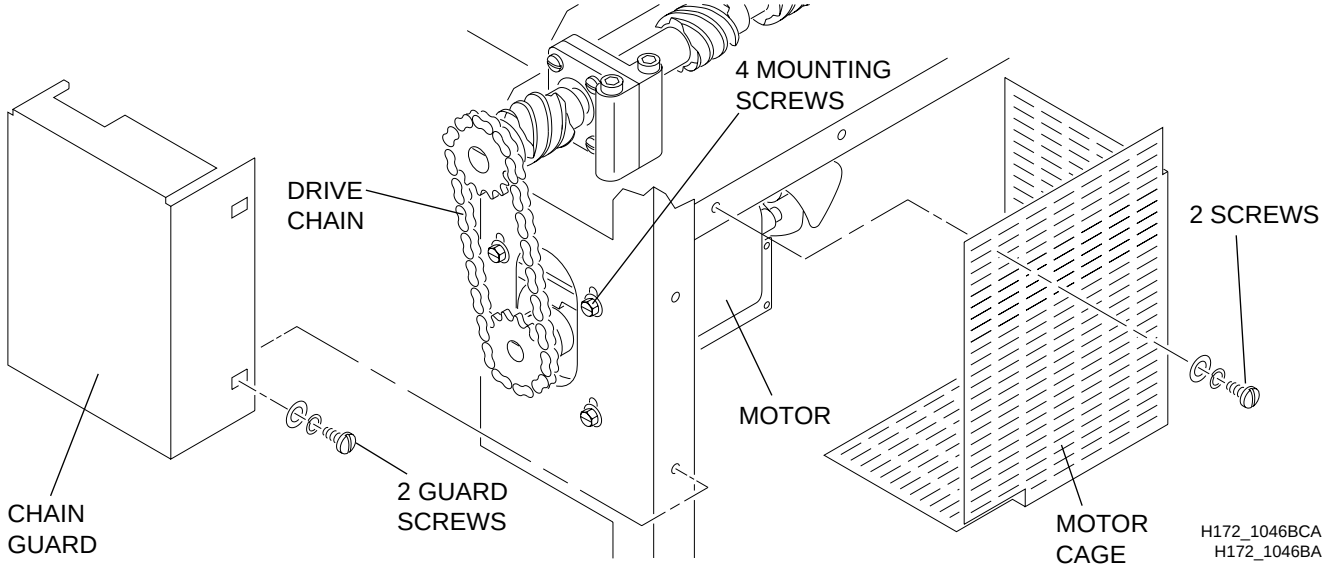
H176_1005HCA
H176_1005HA

[1] Remove:

- top and bottom COVERS
- UPPER and LOWER PLENUM
- SELECTOR PLATE
- first 3 AIR TUBES
- O-RING from the DRIVE GEAR
- PIN
- DRIVE GEAR
- O-RING on the nondrive side
- PIN on the nondrive side
- COLLAR on the nondrive side
- O-RING from the DRIVE ROLLER
- PIN from the DRIVE ROLLER
- SHAFT from the DRIVE ROLLER

MAIN DRIVE

Adjusting the DRIVE CHAIN



Warning

- Dangerous Voltage
- Moving parts

[1] Disconnect the PROCESSOR from the main power.

[2] Remove:

- 2 GUARD SCREWS
- CHAIN GUARD
- 2 SCREWS
- MOTOR CAGE

[3] Loosen the 4 MOUNTING SCREWS.

Caution

Do not tighten the DRIVE CHAIN excessively.

[4] Move the MOTOR to tighten the DRIVE CHAIN.

Caution

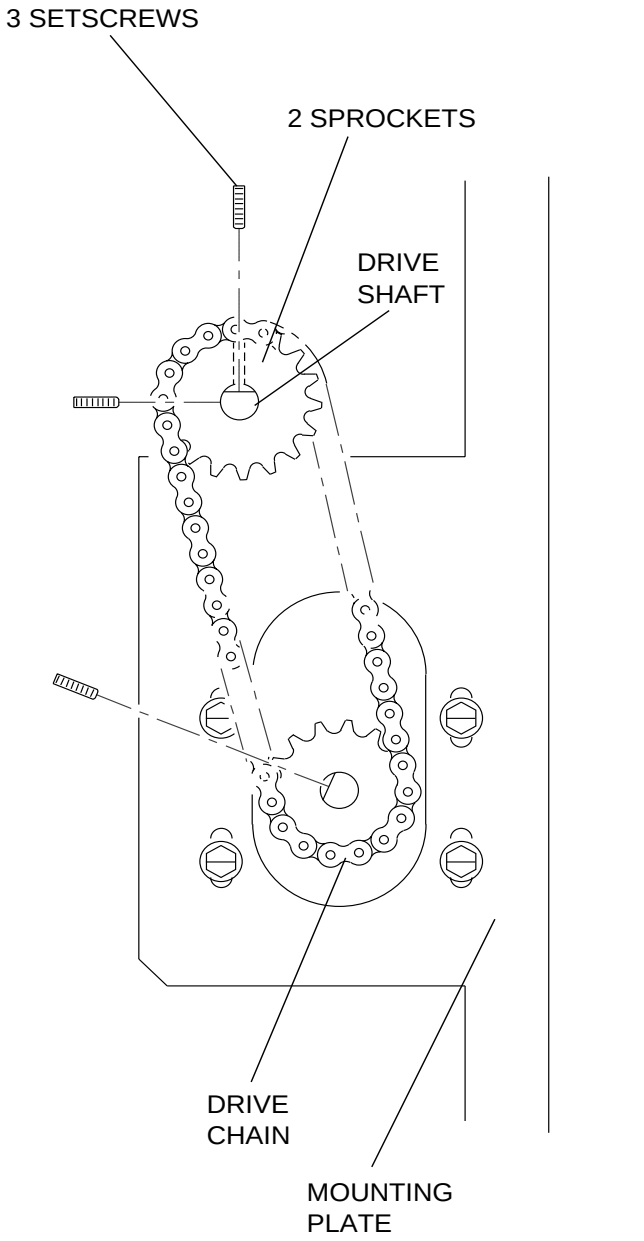
Do not tighten the MOUNTING SCREWS excessively or vibration will occur in the MOTOR.

[5] Tighten the 4 MOUNTING SCREWS.

[6] Install:

- MOTOR CAGE
- 2 SCREWS
- CHAIN GUARD
- 2 GUARD SCREWS

Aligning the MOTOR



H172_1047CCB
H172_1047CC

Warning

- Dangerous Voltage
- Moving parts

[1] Disconnect the PROCESSOR from the main power.

[2] Remove:

- 2 GUARD SCREWS - see Page 25
- CHAIN GUARD - see Page 25

[3] Loosen the 3 SETSCREWS.

[4] Align the 2 SPROCKETS.

[5] Tighten the 3 SETSCREWS.

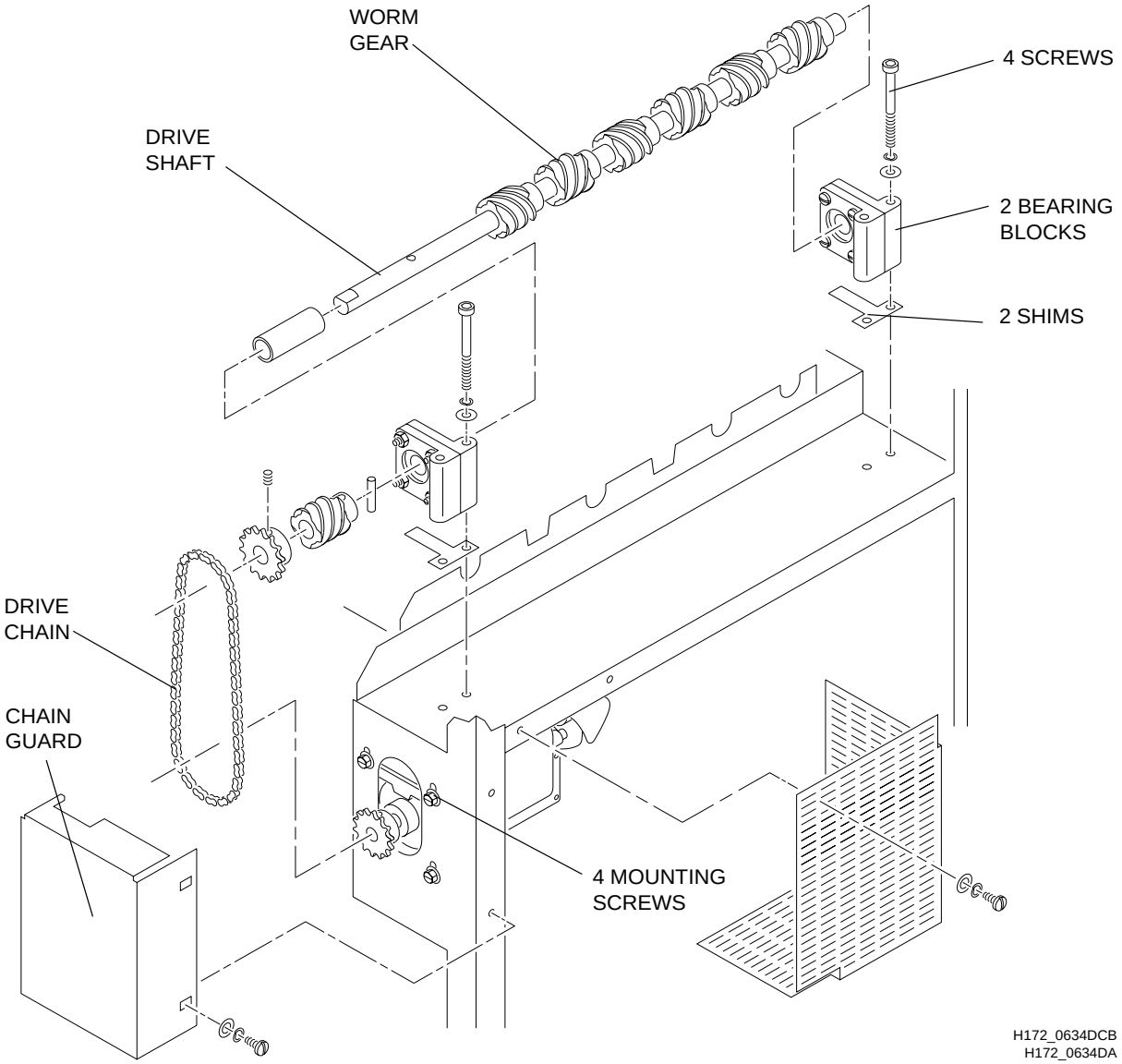
[6] Check:

- DRIVE CHAIN does not touch the MOUNTING PLATE
- SPROCKET on the DRIVE SHAFT does not touch the DRYER RACK

[7] Install:

- 2 GUARD SCREWS
- CHAIN GUARD

DRIVE SHAFT, WORM GEARS or BEARING BLOCKS



[1] Remove the CHAIN GUARD.

[2] Loosen the 4 MOUNTING SCREWS.

[3] Remove:

- DRIVE CHAIN
- 4 SCREWS from the 2 BEARING BLOCKS
- 2 SHIMS
- DRIVE SHAFT

[4] Install the new WORM GEAR or BEARING BLOCKS.

[5] Place the 2 SHIMS under the BEARING BLOCKS.

[6] Install, but do not tighten, the 4 SCREWS from the BEARING BLOCKS.

[7] Adjust the position of the BEARING BLOCKS until the DRIVE SHAFT moves freely.

[8] Tighten the 4 SCREWS.

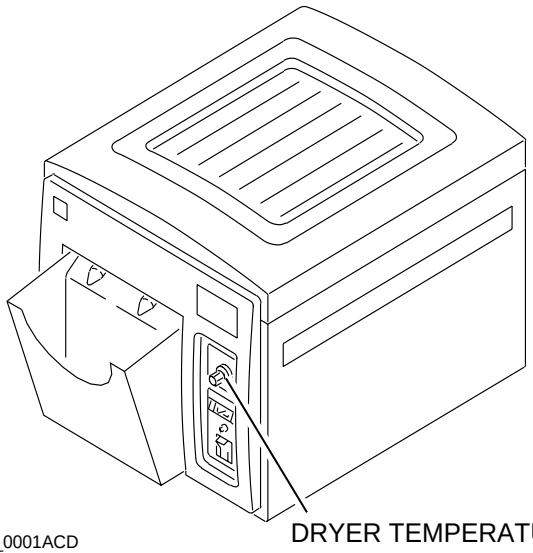
[9] Adjust the tension of the DRIVE CHAIN. See the procedure “Adjusting the DRIVE CHAIN” on Page 25.

[10] Tighten the 4 MOUNTING SCREWS.

[11] Install the CHAIN GUARD.

DRYER HEATER

Adjusting the Temperature



H176_0001ACD
H176_0001AC

Important

Factors which determine the correct temperature are:

- condition of the air
- quantity and type of film

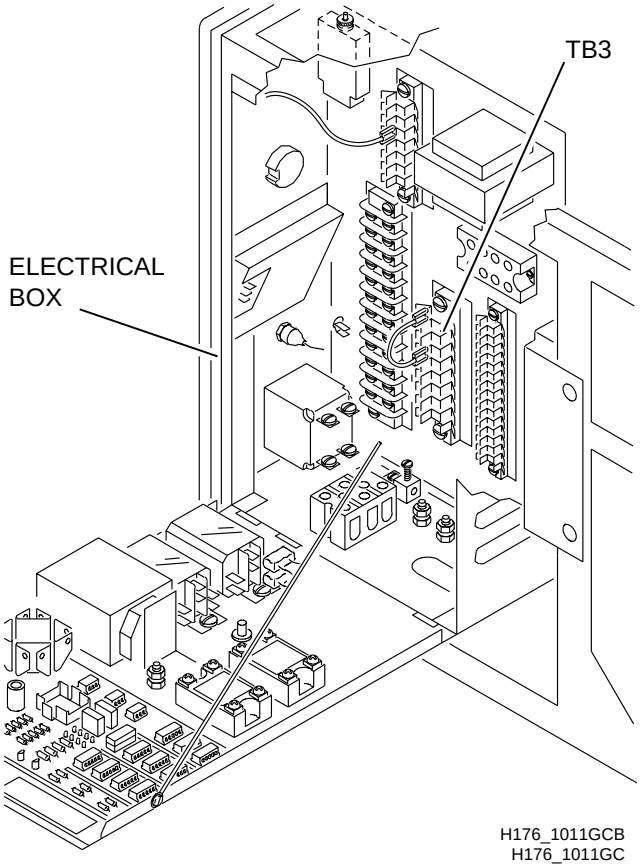
[1] Rotate the DRYER TEMPERATURE CONTROL KNOB to adjust the temperature:

- clockwise to increase the temperature
- counterclockwise to decrease the temperature

Note

Use the lowest possible temperature that will allow the film to dry.

BLOWER ASSEMBLY



H176_1011GCB
H176_1011GC

Warning

Dangerous Voltage

[1] Disconnect the main power.

[2] Remove:

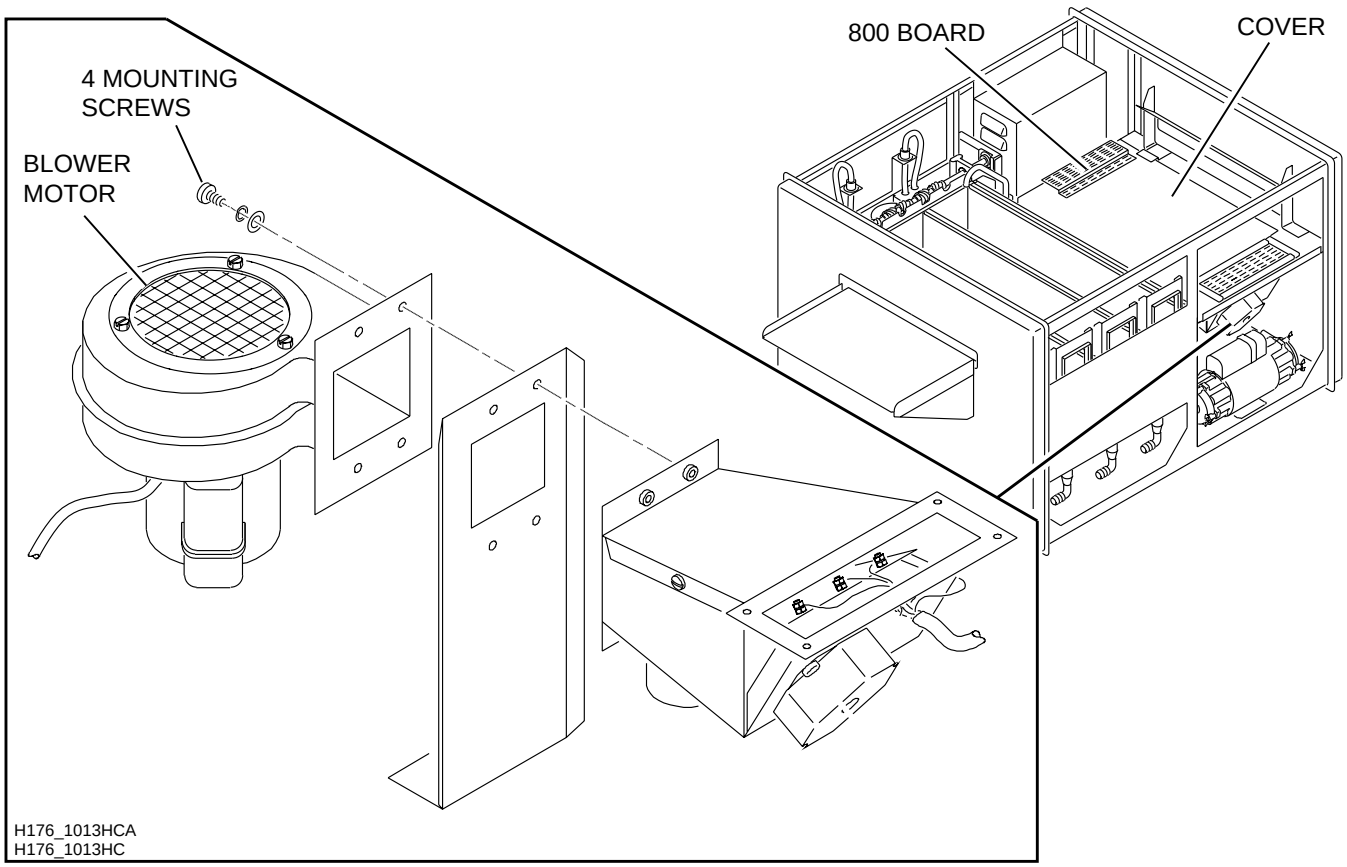
- TOP COVER
- DRYER RACK - see Page 23
- SIDE PANELS

ESD

Possible damage from electrostatic discharge.

[3] Disconnect from the ELECTRICAL BOX:

- TB3-2
- TB3-7
- ground



[4] Remove the COVER.

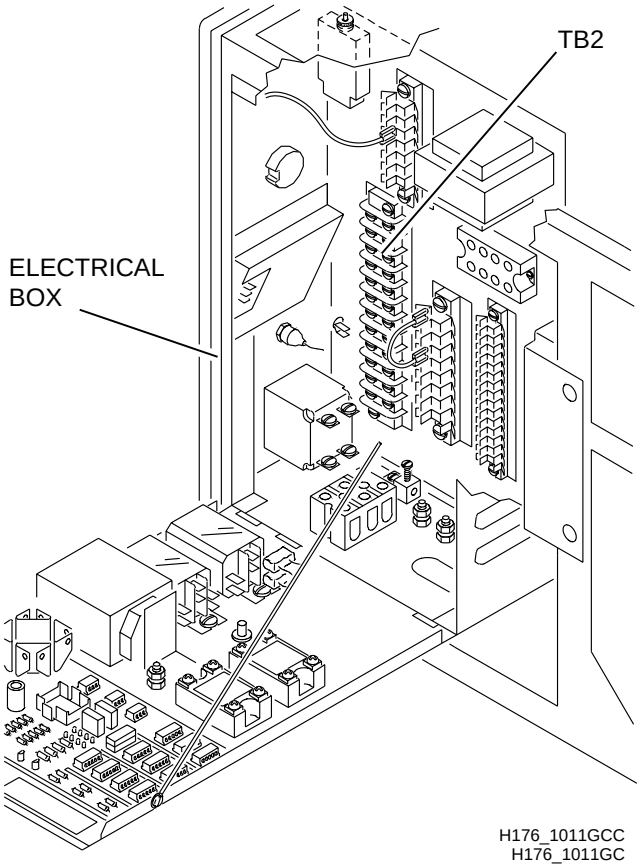
[5] Disconnect the 800 BOARD.

[6] Remove:

- 4 MOUNTING SCREWS
- BLOWER MOTOR

[7] Reverse the steps to install a new BLOWER MOTOR.

DRYER HEATER or HEATER CORE



Warning
Dangerous Voltage

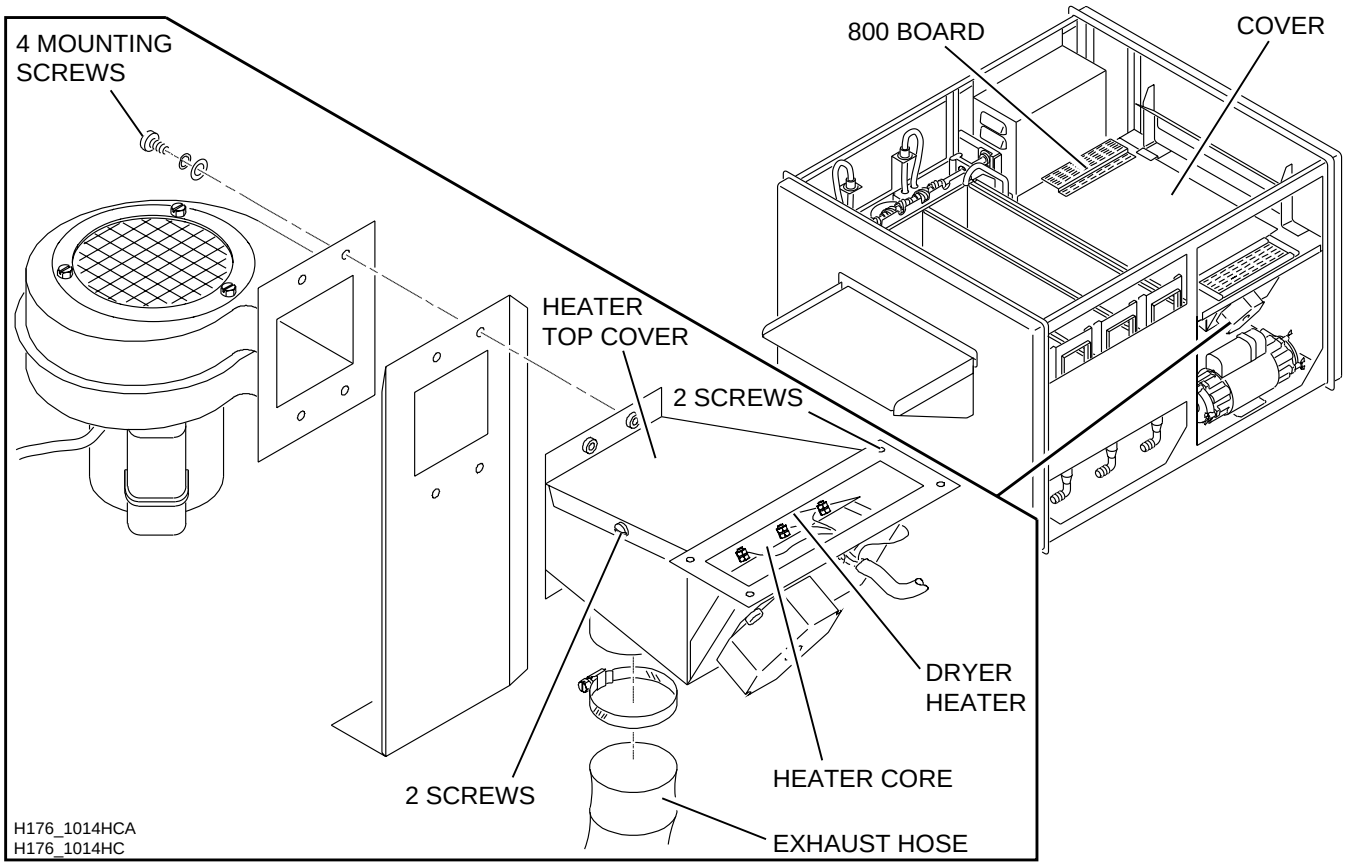
[1] Disconnect the main power.

[2] Remove:

- TOP COVER
- DRYER RACK - see Page 23
- SIDE PANELS

[3] Disconnect from the ELECTRICAL BOX:

- TB2-1
- TB2-3
- TB2-5
- ground



[4] Remove the COVER.

[5] Disconnect the 800 BOARD.

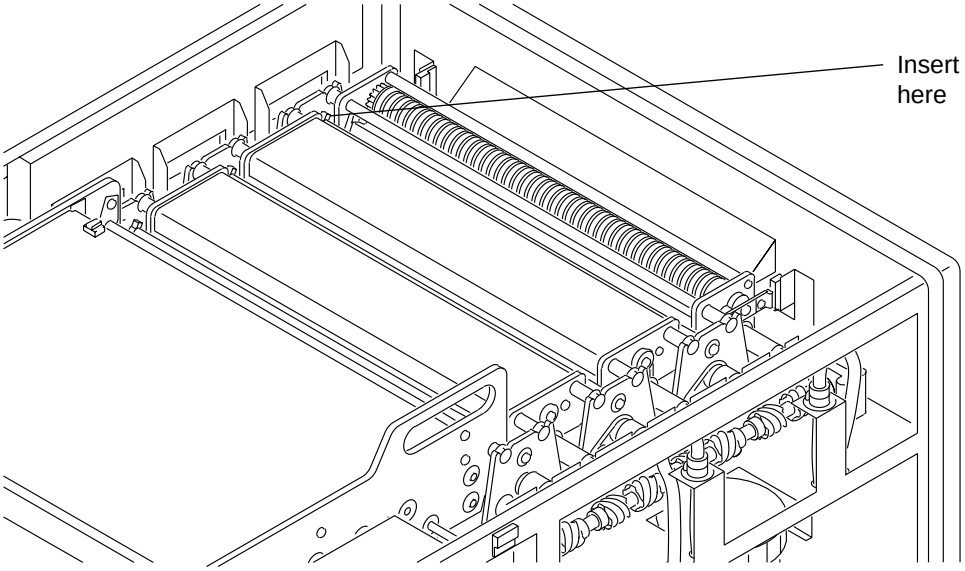
[6] Remove:

- EXHAUST HOSE
- 4 MOUNTING SCREWS
- 2 SCREWS
- DRYER HEATER
- HEATER CORE
  - 2 SCREWS
  - HEATER TOP COVER

[7] Reverse the steps to install a new DRYER HEATER or HEATER CORE.

PLUMBING - Adjustments

Developer Temperature

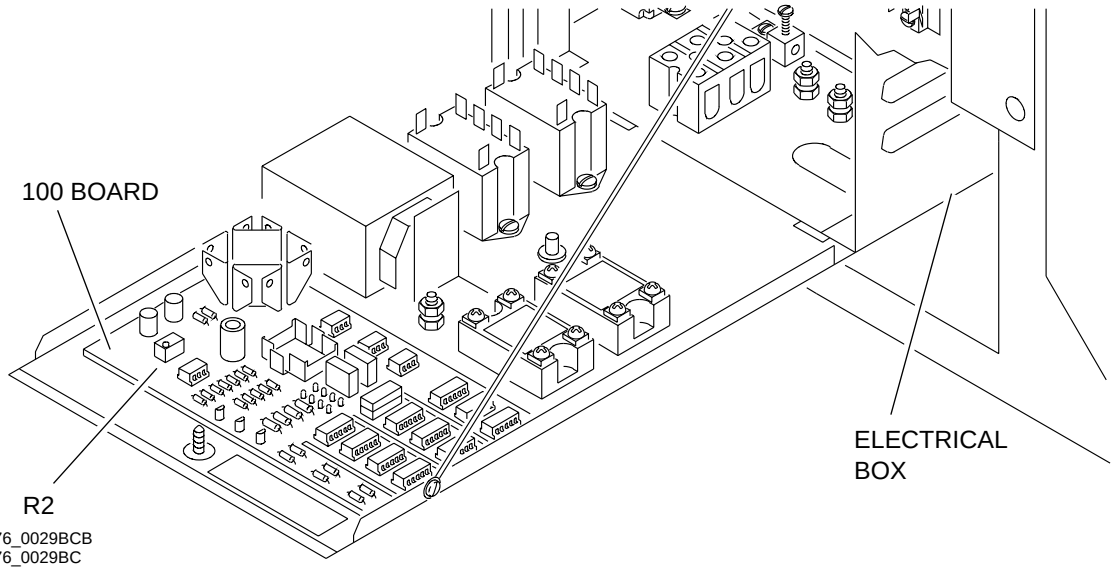


H172_1006BCB
H172_1006BC

[1] Remove the TOP COVER.

[2] Insert a reliable THERMOMETER into the solution on the nondrive side of the PROCESSOR.

[3] Check that the temperature of the developer is correct for the operating cycle of the PROCESSOR.



H176_0029BCB
H176_0029BC

Cycle	Temperature
Standard	33.3 ± 0.3×C (92.0 ± 0.5×F)
Rapid	34.4 ± 0.3×C (94.0 ± 0.5×F)

[4] If the developer temperature is correct, advance to Step 8.

Warning

- Dangerous Voltage
- Possible damage from electrostatic discharge

[5] If the developer temperature is not correct:

(a) Open the ELECTRICAL BOX.

(b) Rotate R2 on the 100 BOARD using the POTENTIOMETER ADJUSTING TOOL TL-1481:

- clockwise to increase the temperature
- counterclockwise to decrease the temperature

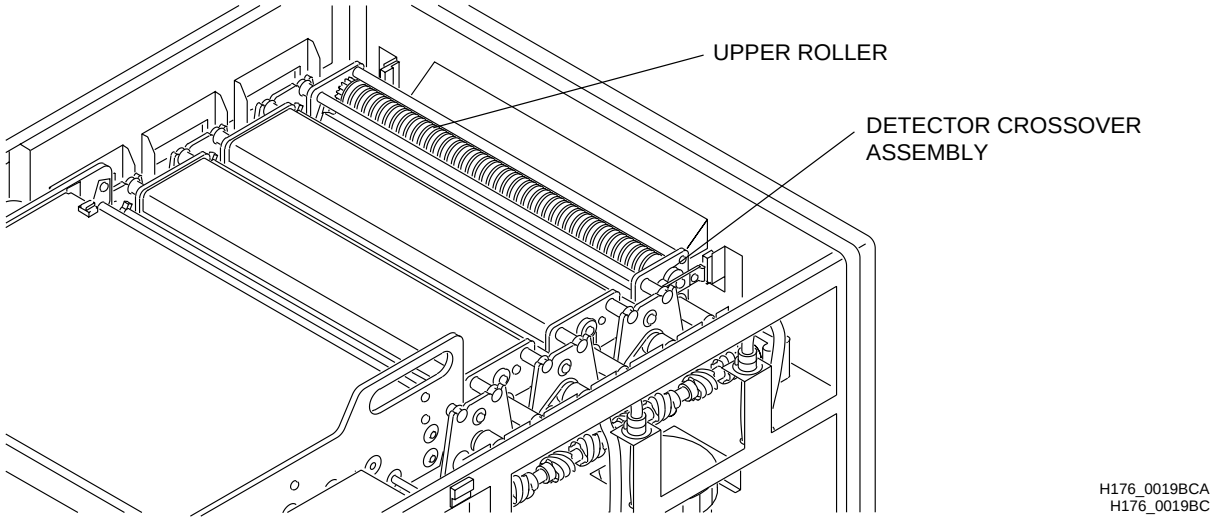
[6] Allow the developer solution to reach a stable temperature.

[7] Do Step 3.

[8] Close the ELECTRICAL BOX.

[9] Install the TOP COVER.

Replenishment Rates

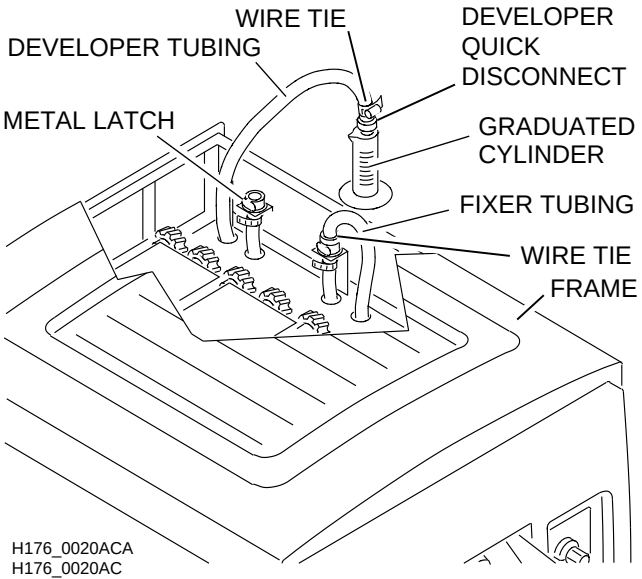


Warning
Dangerous Voltage

[1] Energize the PROCESSOR.

Warning
Use eye protection. The replenishment solutions might splash.

[2] Lift the UPPER ROLLER of the DETECTOR CROSSOVER ASSEMBLY to actuate the REPLENISHMENT PUMP.



[3] Check that the replenishment solutions move freely through the DEVELOPER and FIXER TUBINGS on the drive side.

[4] Release the UPPER ROLLER to stop the REPLENISHMENT PUMP.

Important
The DEVELOPER QUICK DISCONNECT is identified with a red WIRE TIE.

[5] Press the METAL LATCH to disconnect the DEVELOPER QUICK DISCONNECT.

[6] Pull the DEVELOPER TUBING a minimum distance.

[7] Rotate the DEVELOPER TUBING over the edge of the FRAME and into the GRADUATED CYLINDER.

[8] Lift the UPPER ROLLER of the DETECTOR CROSSOVER ASSEMBLY for the time indicated in the table on Page 34.

[9] When the REPLENISHMENT PUMP stops, check that the quantity of solution in the GRADUATED CYLINDER is correct. See the table on Page 34.

[10] If the replenishment rate is not correct, do the adjustment procedure for the REPLENISHMENT PUMP on Page 35.

[11] Connect the DEVELOPER QUICK DISCONNECT by pressing it into the METAL LATCH until the DEVELOPER TUBING snaps in position.

Important

The FIXER TUBING is identified with a blue WIRE TIE.

[12] Check the replenishment rate of the fixer solution by doing Step 5 - Step 11 with the FIXER TUBING.

[13] Install the TOP COVER.

Replenishment Rates - Dedicated MAMMOGRAPHY

Film Type and Feeding	Use Condition	Average Number of 18 x 24 cm Films per 8 Hours of PROCESSOR Operation	Replenishment Flow Rate, mL per 18 x 24 cm Film Standard Cycle Times: 19 seconds per 24 cm of Film Travel 14 seconds per 18 cm of Film Travel	
			Developer	Fixer
Kodak Min-R M FILM Single Film Feeding	High Medium Low	150 sheets or more 60 - 150 sheets 60 sheets or less*	30 30 35	30 35 40
Kodak Min-R M FILM Double Film Feeding	High Medium Low	150 sheets or more 60 - 150 sheets 60 sheets or less*	60 60 70	60 70 80
Kodak Min-R 2000 FILM Single Film Feeding	Medium - High Low	60 sheets or more 60 sheets or less*	25 Flooded	30 Flooded
Kodak Min-R 2000 FILM Double Film Feeding	Medium - High Low	60 sheets or more 60 sheets or less*	50 Flooded	60 Flooded

Replenishment Rates - GENERAL RADIOGRAPHY

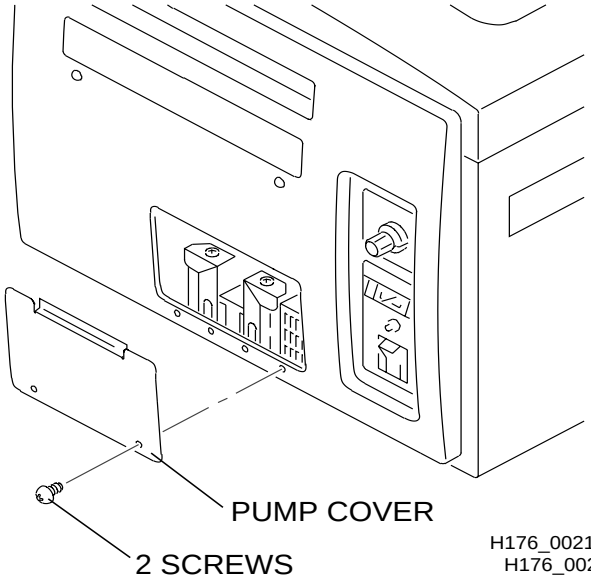
Film Size Processed	Use Condition	Average Number of Film per 8 Hours of PROCESSOR Operation	Replenishment Flow Rate, mL per 43 cm Film Travel 34 seconds for Standard Cycle 25 seconds for Rapid Cycle	
			Developer	Fixer
Only 35 x 35 cm film	High Medium Low	90 sheets or more 30 - 90 sheets 30 sheets or less*	50 65 80	70 85 100
Average size intermix film	High Medium Low	115 sheets or more 40 - 115 sheets 40 sheets or less*	50 65 80	70 85 100
Only 35 x 43 cm film	High Medium Low	75 sheets or more 25 - 75 sheets 25 sheets or less*	60 80 100	85 100 120

* If sensitometry does not remain within control limits, the “Flooded Replenishment” mode might be necessary. For more information on “Flooded Replenishment” and recommended processing instructions, see the SERVICE BULLETIN 30, Publication No. 632661.

Note

- *Kodak RP X-Omat* CHEMICALS are recommended.
- Sensitometric changes will occur as subsequent films are processed through a freshly started process. This is known as “seasoning” and is normal with any photographic process. Process control targets might have to be adjusted to compensate.

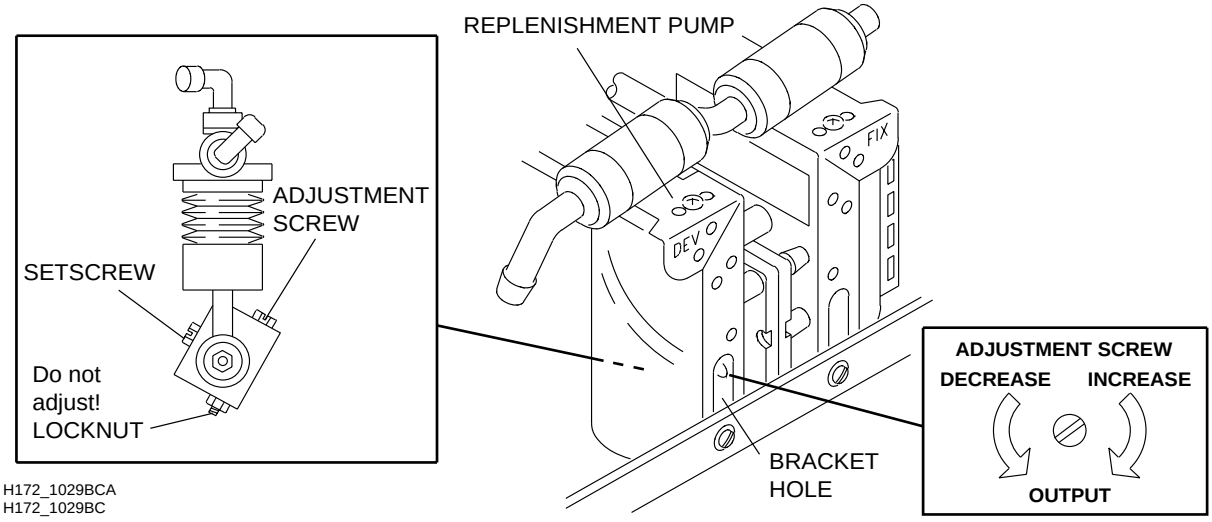
REPLENISHMENT PUMP



H176_0021ACA
H176_0021AC

[1] Remove:

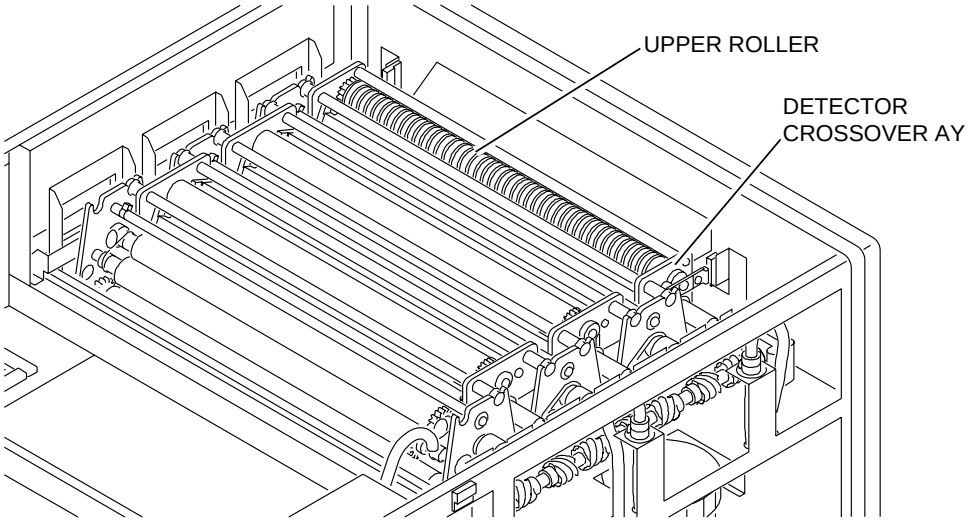
- TOP COVER
- RECEIVING BIN
- 2 SCREWS
- PUMP COVER



H172_1029BCA
H172_1029BC

[2] Check that the ADJUSTMENT SCREW is visible through the BRACKET HOLE.

[3] If the ADJUSTMENT SCREW is visible, advance to Step 5.



H176_0022BCA
H176_0022BC

[4] If the ADJUSTMENT SCREW is not visible, operate the REPLENISHMENT PUMP until the ADJUSTMENT SCREW is visible by lifting the UPPER ROLLER of the DETECTOR CROSSOVER ASSEMBLY.

Caution

Do not adjust the LOCKNUT.

[5] Loosen the SETSCREW.

[6] Rotate the ADJUSTMENT SCREW to change the flow rate:

- clockwise to increase
- counterclockwise to decrease

[7] Tighten the SETSCREW.

[8] Check the Replenishment Rates. See “Replenishment Rates” on Page 33.

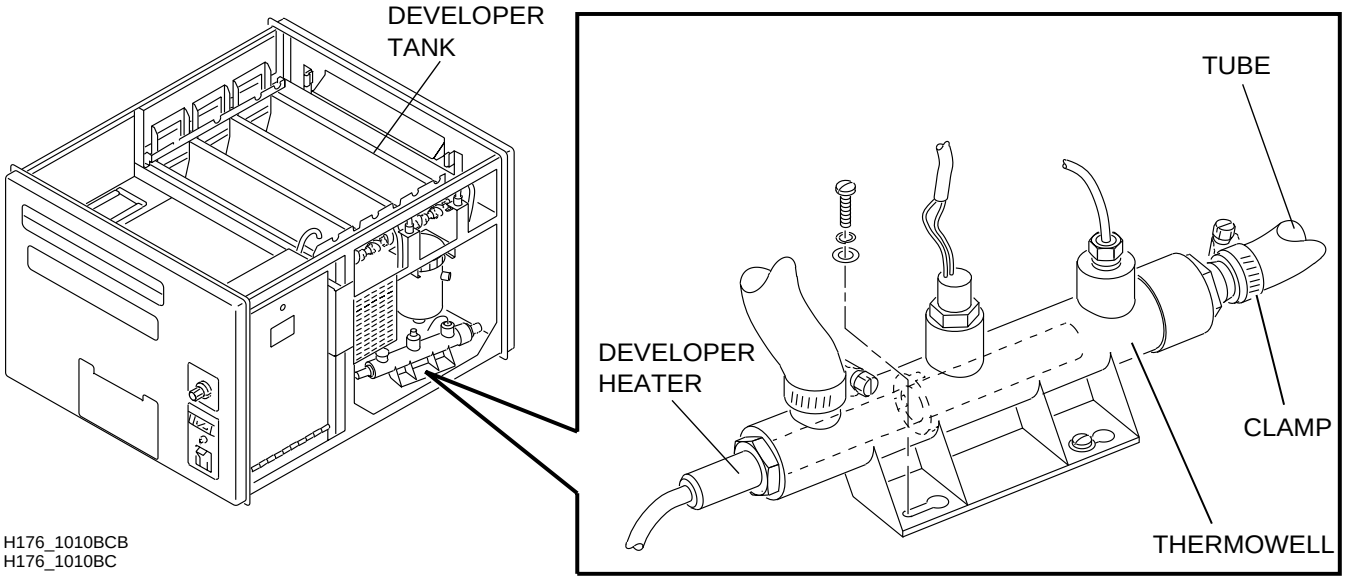
[9] If the replenishment rate is not correct, do Step 2 - Step 8 again.

[10] Install:

- PUMP COVER
- RECEIVING BIN
- TOP COVER

PLUMBING - Replacements

DEVELOPER HEATER

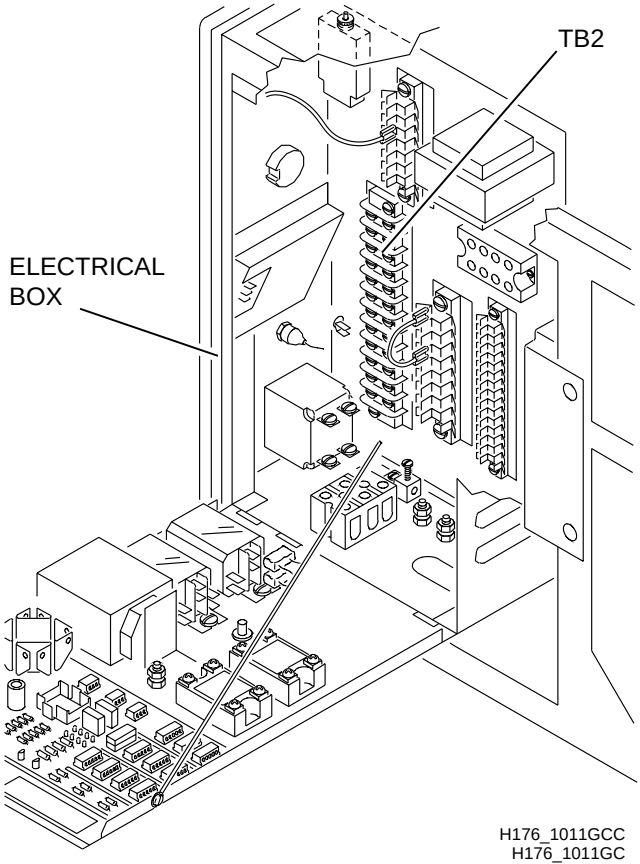


H176_1010BCB
H176_1010BC

Warning
Dangerous Voltage

[1] Disconnect the main power.

[2] Drain the DEVELOPER TANK or apply CLAMPS to the 2 TUBES on the THERMOWELL.



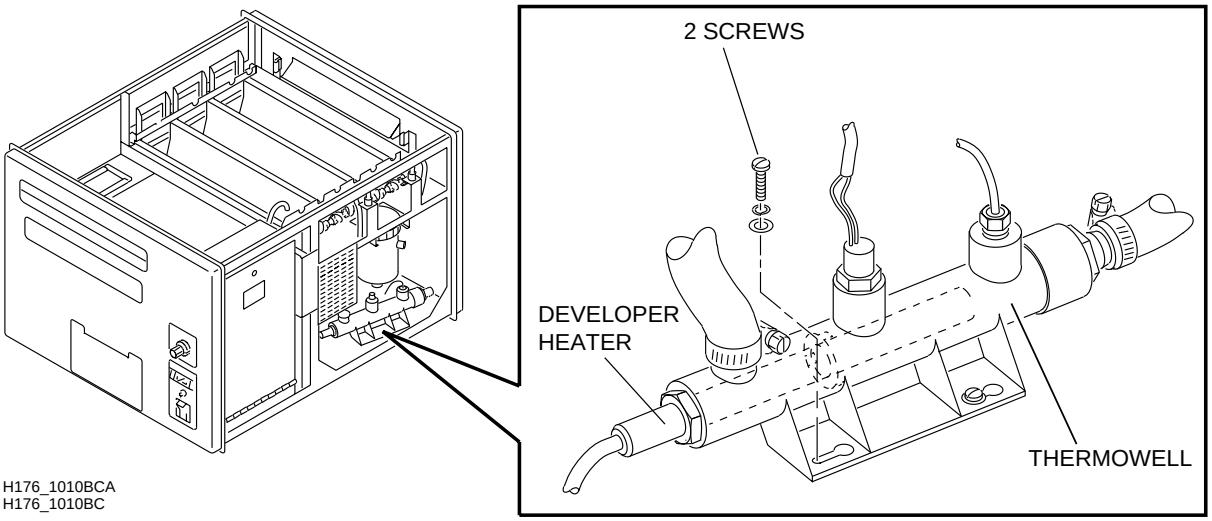
H176_1011GCC
H176_1011GC

ESD
Possible damage from electrostatic discharge.

[3] Open the ELECTRICAL BOX.

[4] Disconnect the following wires to the DEVELOPER HEATER:

- TB2-9
- TB2-10



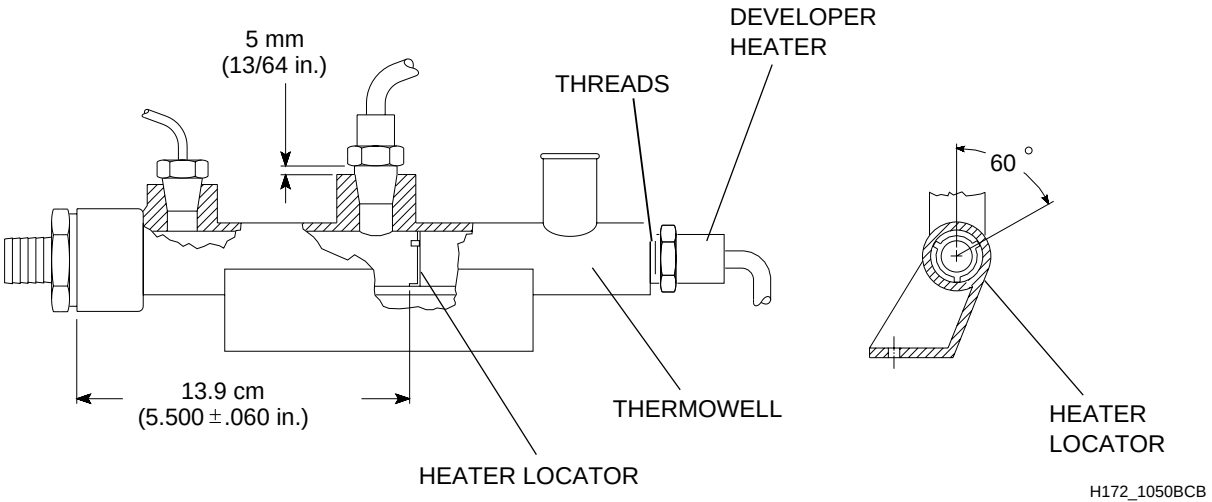
H176_1010BCA
H176_1010BC

Warning

Prevent leakage of solutions when you remove the DEVELOPER HEATER.

[5] Remove:

- 2 SCREWS
- THERMOWELL
- DEVELOPER HEATER from the THERMOWELL



H172_1050BCB
H172_1050BA

[6] Apply SEALANT TL-3230 to the THREADS on the new DEVELOPER HEATER.

[7] Check that the HEATER LOCATOR is in the correct position inside of the THERMOWELL.

[8] Insert the new DEVELOPER HEATER into the THERMOWELL.

Caution

Prevent damage to the THERMOWELL. Do not excessively tighten the DEVELOPER HEATER.

[9] Tighten the DEVELOPER HEATER with your hand. Then tighten the DEVELOPER HEATER an additional 1/4 rotation.

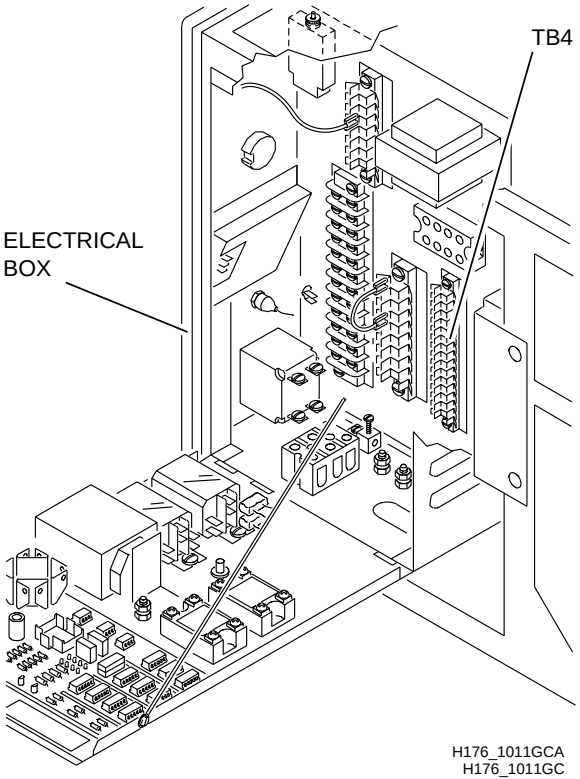
[10] Install the THERMOWELL. Use the 2 SCREWS.

[11] Connect the wires of the DEVELOPER HEATER at TB2-9 and TB2-10.

[12] Close the ELECTRICAL BOX.

[13] Fill the DEVELOPER TANK or remove the CLAMPS from the TUBES on the THERMOWELL.

DEVELOPER THERMISTOR



H176_1011GCA
H176_1011GC

Warning
Dangerous Voltage

[1] Disconnect the main power.

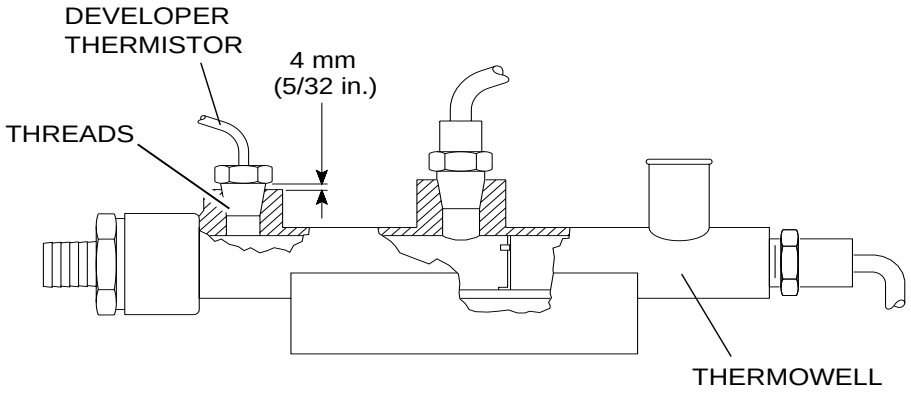
[2] Drain the DEVELOPER TANK or apply CLAMPS to the 2 TUBES on the THERMOWELL. See Page 37.

ESD
Possible damage from electrostatic discharge.

[3] Open the ELECTRICAL BOX.

[4] Disconnect the following wires to the DEVELOPER THERMISTOR:

- TB4-13
- TB4-14



H172_1051BCB
H172_1051BA

Warning
Prevent leakage of solutions when you remove the DEVELOPER THERMISTOR.

[5] Remove the DEVELOPER THERMISTOR from the THERMOWELL.

[6] Apply SEALANT TL-3230 to the THREADS on the new DEVELOPER THERMISTOR.

Caution
You must install the DEVELOPER THERMISTOR at the correct distance from the THERMOWELL.

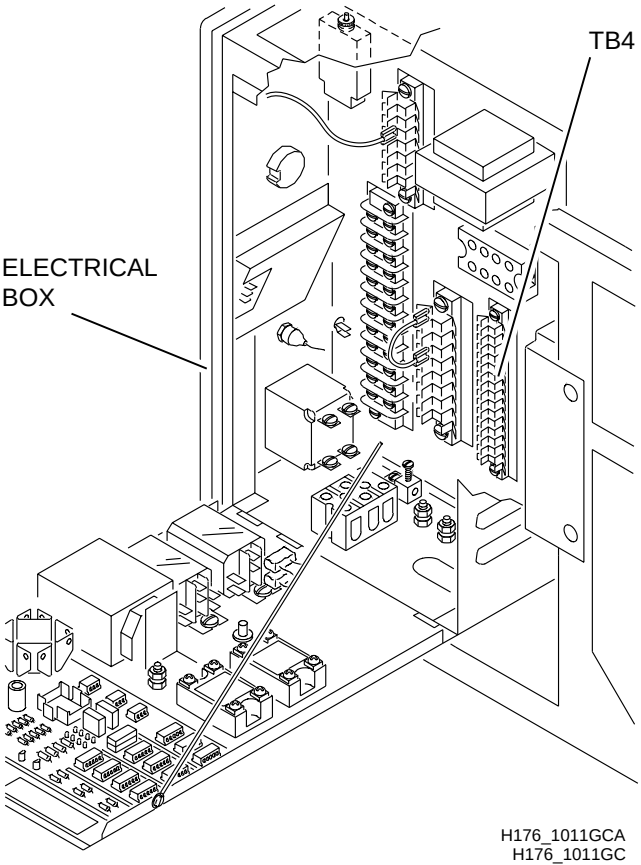
[7] Install the new DEVELOPER THERMISTOR 4 mm (5/32 in.) from the THERMOWELL.

[8] Connect the wires of the new DEVELOPER THERMISTOR at TB4-13 and TB4-14.

[9] Close the ELECTRICAL BOX.

[10] Fill the DEVELOPER TANK or remove the CLAMPS from the TUBES on the THERMOWELL.

DEVELOPER OVER-TEMPERATURE THERMOSTAT



H176_1011GCA
H176_1011GC

Warning
Dangerous Voltage

[1] Disconnect the main power.

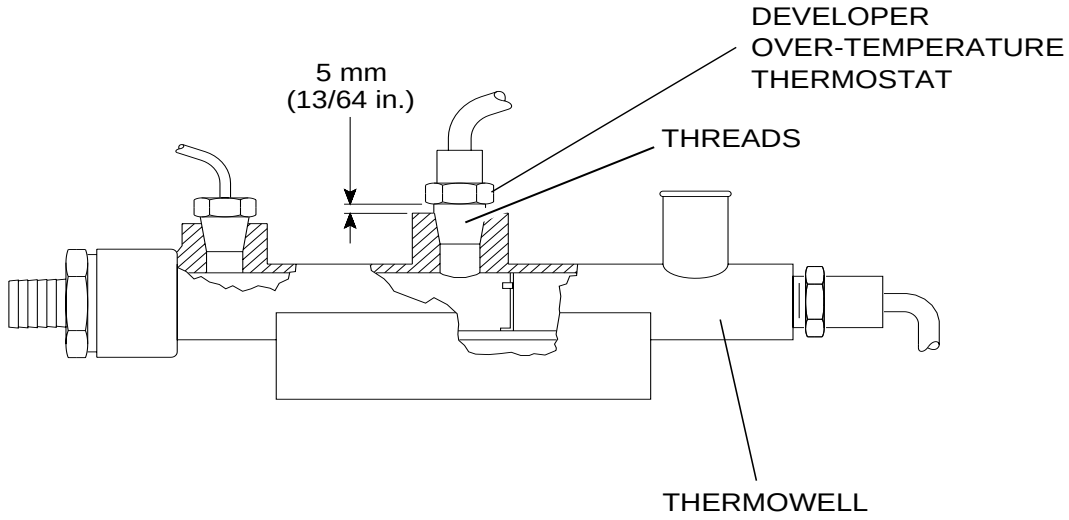
[2] Drain the DEVELOPER TANK or apply CLAMPS to the 2 TUBES on the THERMOWELL. See Page 37.

ESD
Possible damage from electrostatic discharge.

[3] Open the ELECTRICAL BOX.

[4] Disconnect the following wires to the DEVELOPER OVER-TEMPERATURE THERMOSTAT:

- TB4-8
- TB4-9
- TB4-15
- TB4-16



H176_1012BCA
H176_1012BA

Warning
Prevent leakage of solutions when you remove the DEVELOPER OVER-TEMPERATURE THERMOSTAT.

[5] Remove the DEVELOPER OVER-TEMPERATURE THERMOSTAT from the THERMOWELL.

[6] Apply SEALANT TL-3230 to the THREADS on the new DEVELOPER OVER-TEMPERATURE THERMOSTAT.

Caution

You must install the DEVELOPER OVER-TEMPERATURE THERMOSTAT at the correct distance from the THERMOWELL.

[7] Install the new DEVELOPER OVER-TEMPERATURE THERMOSTAT 5 mm (13/64 in.) from the THERMOWELL.

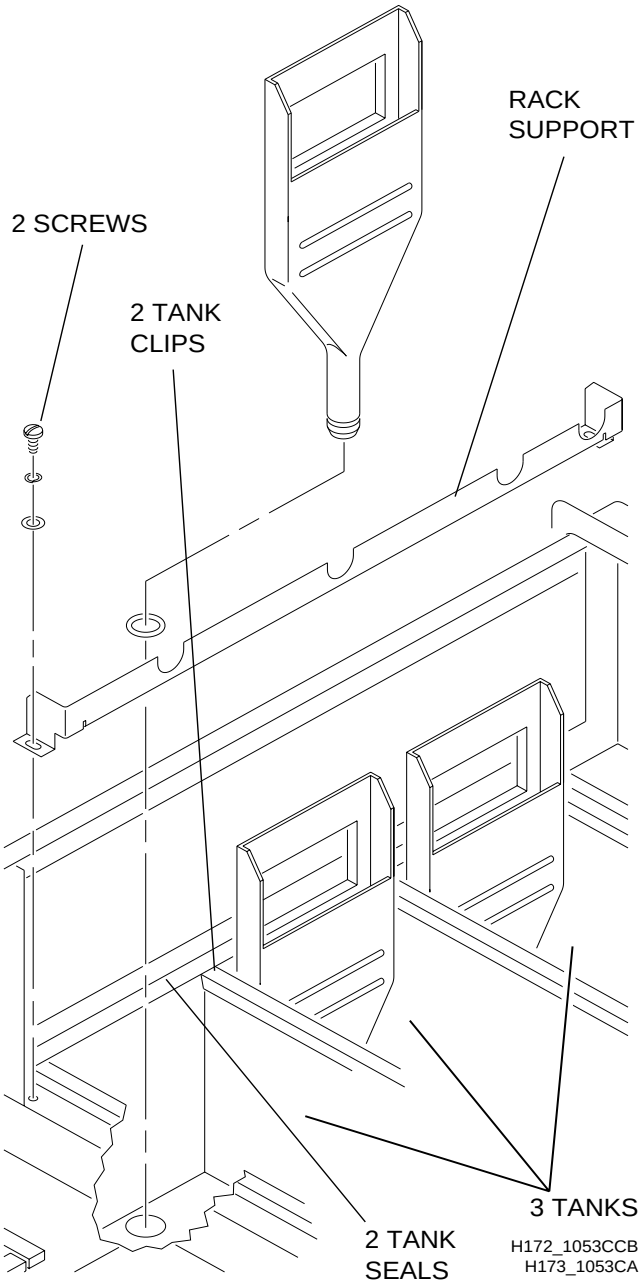
[8] Connect the following wires of the new DEVELOPER OVER-TEMPERATURE THERMOSTAT to:

- TB4-8
- TB4-9
- TB4-15
- TB4-16

[9] Close the ELECTRICAL BOX.

[10] Fill the DEVELOPER TANK or remove the CLAMPS from the TUBES on the THERMOWELL.

HEAT EXCHANGER



Warning
Dangerous Voltage

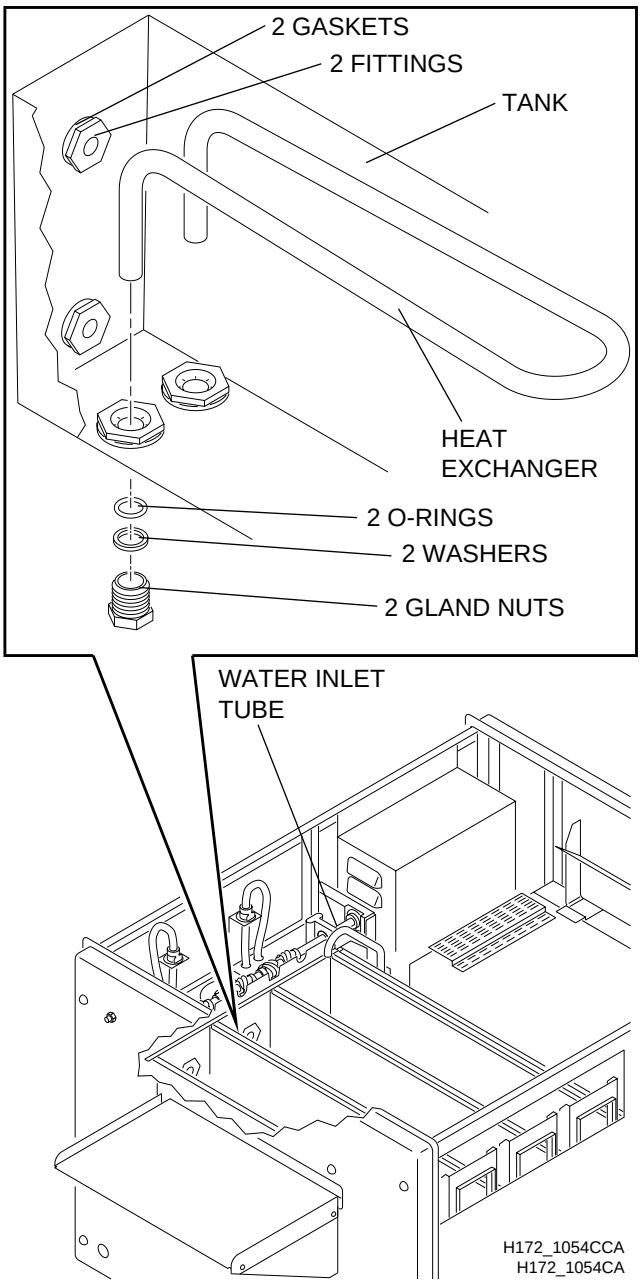
[1] Disconnect:
- main power
- water supply

[2] Remove:
- TOP COVER
- 2 SIDE PANELS

[3] Drain the 3 TANKS.

[4] Remove:
- 2 SCREWS
- RACK SUPPORT
- 2 TANK SEALS
- 2 TANK CLIPS

[5] Disconnect all TUBING from the TANK.



[6] Remove if necessary:

- 2 FITTINGS
- WATER INLET TUBE

[7] To remove the TANK, lift the nondrive side of the TANK first.

[8] Remove from the TANK:

- 2 GLAND NUTS
- 2 O-RINGS
- 2 WASHERS
- HEAT EXCHANGER

Important

Use new GASKETS if you are installing a FIXER TANK.

[9] Install:

- new HEAT EXCHANGER
- 2 O-RINGS
- 2 WASHERS
- 2 GLAND NUTS
- TANK
- 2 FITTINGS
- 2 GASKETS
- WATER INLET TUBE
- TANK SEALS
- TANK CLIP
- TUBING
- RACK SUPPORT

[10] Move the RACK SUPPORT toward the nondrive side of the PROCESSOR.

[11] Install the 2 SCREWS.

[12] Fill the TANKS with water.

[13] Check for leakage.

[14] Fill the DEVELOPER TANK and the FIXER TANK with the correct solution.

[15] Connect the water supply.

[16] Install:

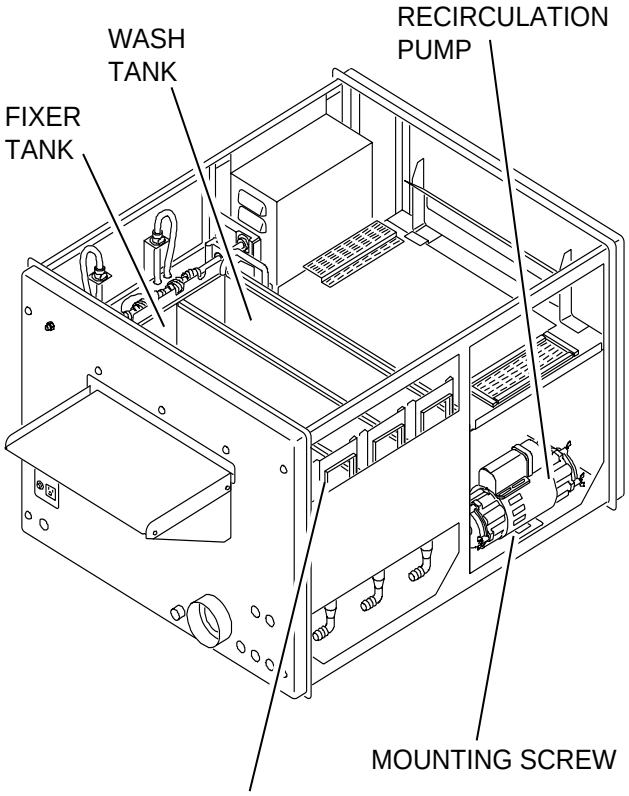
- 2 SIDE PANELS
- TOP COVER

Warning

Dangerous Voltage

[17] Connect the main power.

RECIRCULATION PUMP



H176_0026GCA
H176_0026GC

Warning
Dangerous Voltage

[1] Disconnect the main power and water supply.

[2] Remove:
- TOP COVER
- 2 SIDE PANELS

[3] Drain the 3 TANKS.

[4] Install the PINCH CLAMPS on the TUBING to the RECIRCULATION PUMP to prevent leakage of solution.

[5] Disconnect the TUBING to the RECIRCULATION PUMP.

[6] Remove:
- MOUNTING SCREWS
- RECIRCULATION PUMP

[7] Install:
- new RECIRCULATION PUMP
- MOUNTING SCREWS

[8] Connect:
- TUBING to the RECIRCULATION PUMP
- water supply

[9] Remove the PINCH CLAMPS from the TUBING.

[10] Fill the 3 TANKS with water.

Warning
Dangerous Voltage

[11] Connect the main power.

Caution
Do not operate the RECIRCULATION PUMP if the TANKS are empty.

[12] Actuate the RECIRCULATION PUMP.

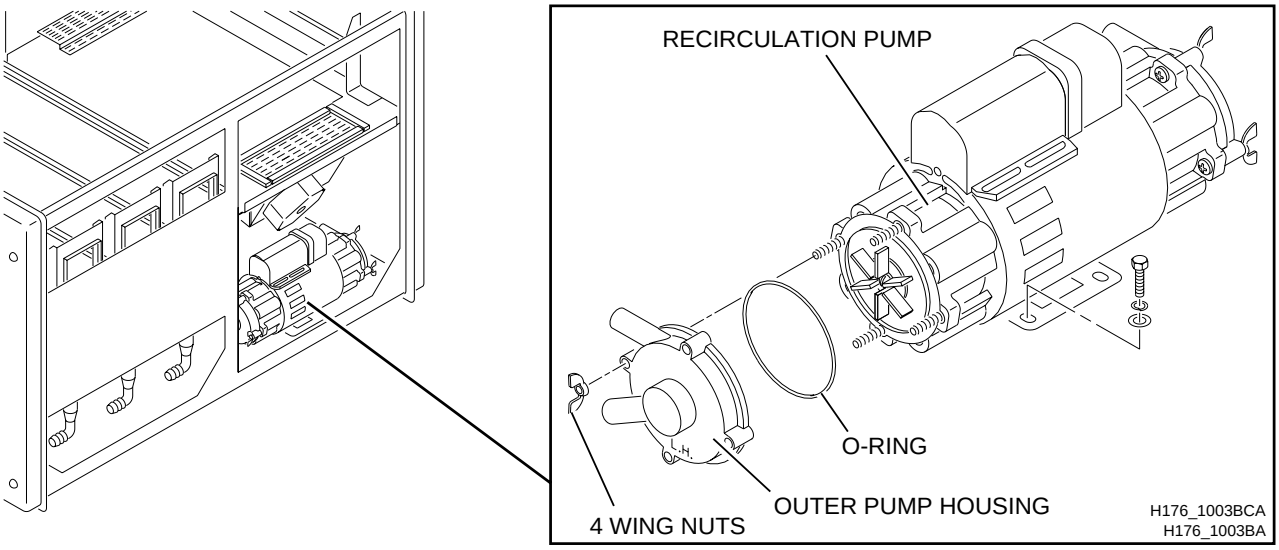
[13] Check:
- agitation of the water in the TANK
- leakage

[14] Drain the water from the DEVELOPER TANK and the FIXER TANK.

[15] Fill the DEVELOPER TANK and the FIXER TANK with the correct solution.

[16] Install:
- 2 SIDE PANELS
- TOP COVER

O-RING in the RECIRCULATION PUMP



Warning
Dangerous Voltage

[1] Disconnect the main power and water supply.

[2] Remove the TOP COVER and 2 SIDE PANELS.

[3] Install PINCH CLAMPS on the TUBING to the RECIRCULATION PUMP to prevent leakage of solution.

[4] Remove:

- 4 WING NUTS
- OUTER PUMP HOUSING
- O-RING

Important
The new O-RING must seat correctly.

[5] Install:

- new O-RING
- OUTER PUMP HOUSING
- 4 WING NUTS

[6] Remove the PINCH CLAMPS from the TUBING.

Warning
Dangerous Voltage

[7] Connect the main power.

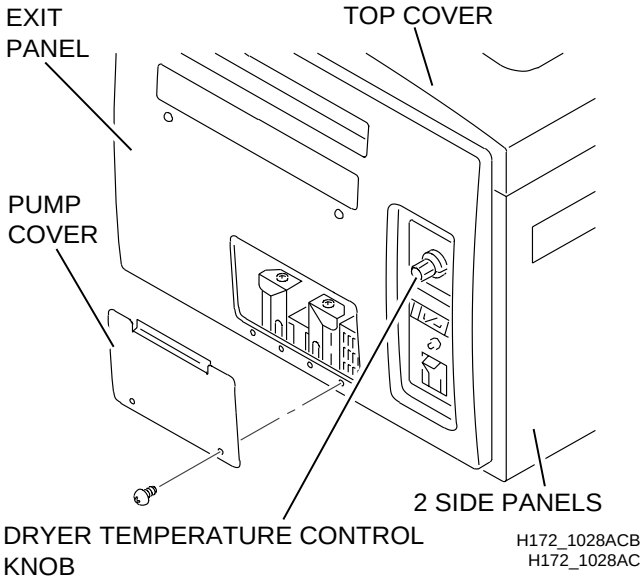
Caution
Do not operate the RECIRCULATION PUMP if the TANKS are empty.

[8] Actuate the RECIRCULATION PUMP.

[9] Check:

- agitation of the solution in the TANK
- leakage

REPLENISHMENT PUMP



H172_1028ACB
H172_1028AC

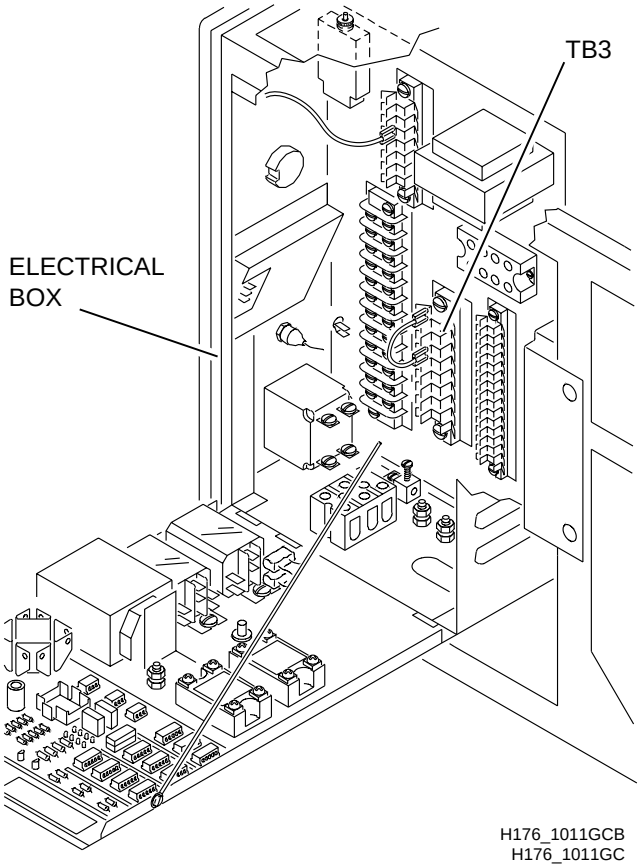
Warning
Dangerous Voltage

[1] Disconnect:

- main power
- water supply

[2] Remove:

- TOP COVER
- 2 SIDE PANELS
- RECEIVING BIN
- DRYER TEMPERATURE CONTROL KNOB
- PUMP COVER
- EXIT PANEL

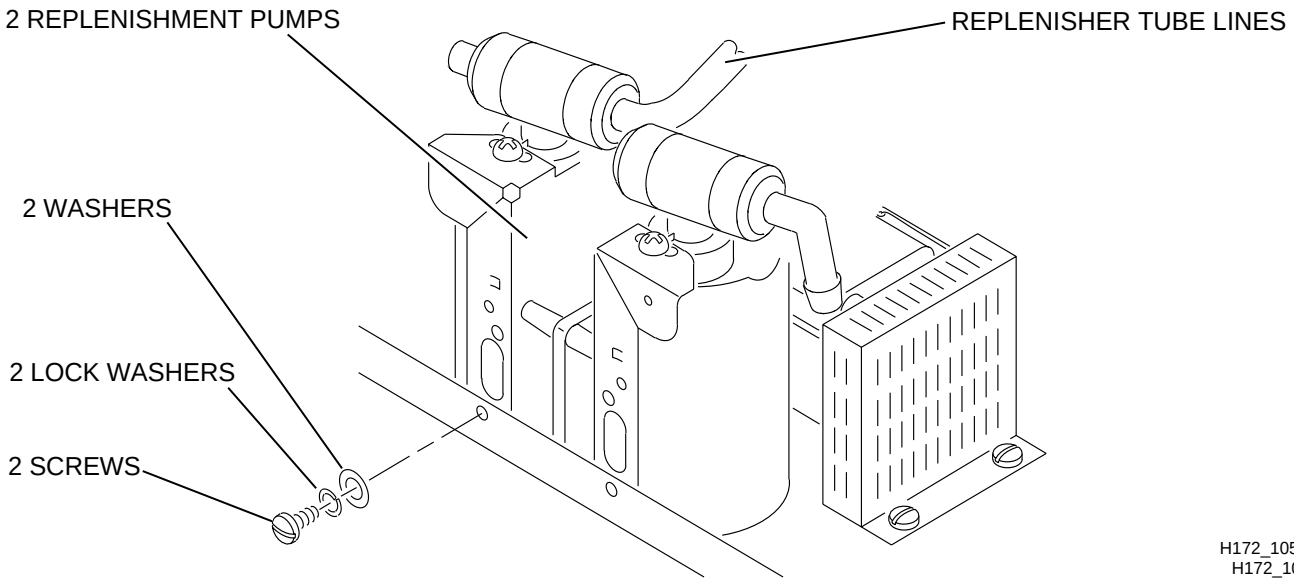


H176_1011GCB
H176_1011GC

ESD
Possible damage from electrostatic discharge.

[3] Disconnect from the ELECTRICAL BOX:

- TB3-6
- TB3-2
- ground



H172_1057BCA
H172_1057BC

[4] Install PINCH CLAMPS on the TUBING to the REPLENISHMENT PUMP.

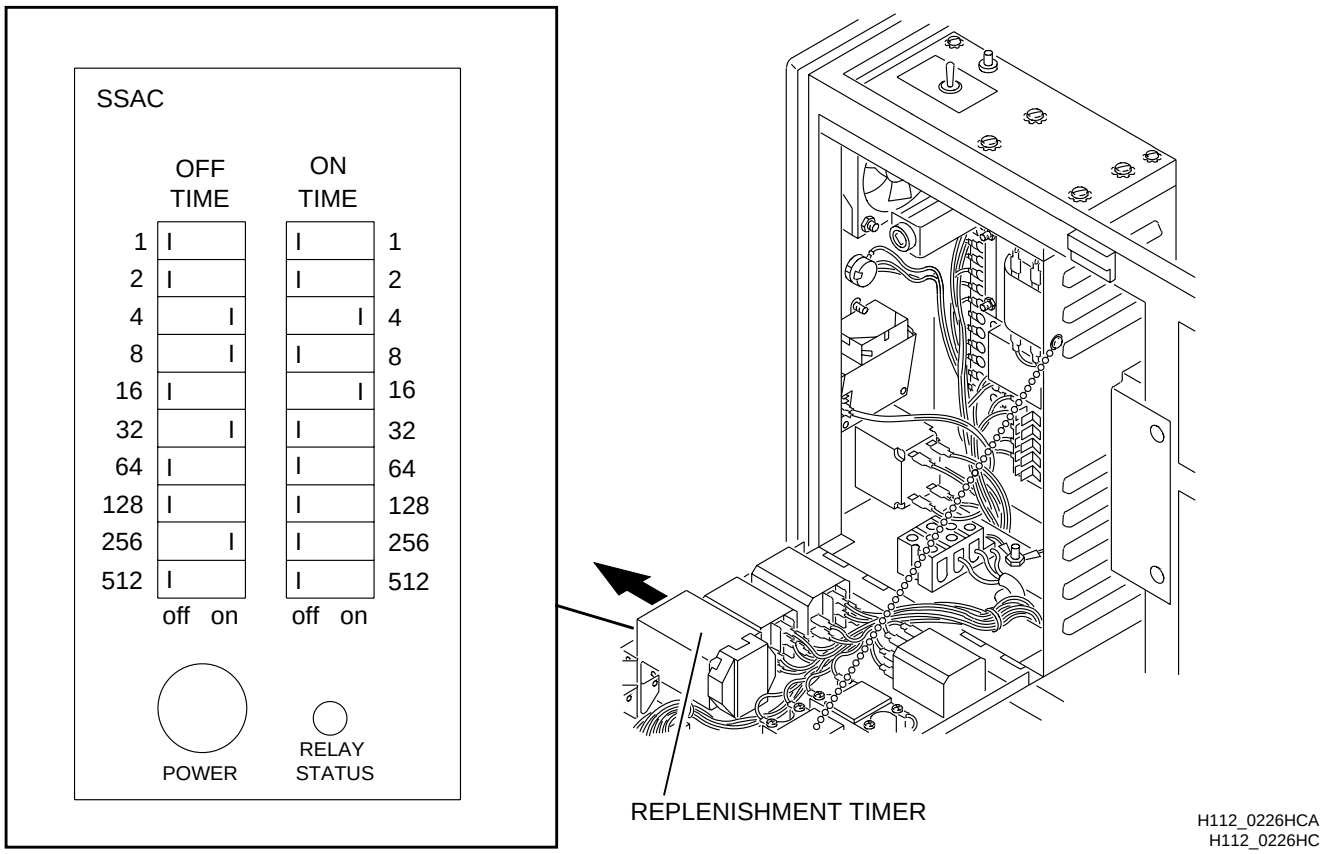
[5] Disconnect the REPLENISHER TUBE LINES.

[6] Remove:

- 2 SCREWS
- 2 LOCK WASHERS
- 2 WASHERS
- REPLENISHMENT PUMP

[7] Reverse the steps to install a new REPLENISHMENT PUMP.

REPLENISHMENT TIMER



[1] Remove and discard the REPLENISHMENT TIMER.

[2] Check that the new REPLENISHMENT TIMER is set to:

"Off Time"	"On Time"
300 seconds	20 seconds

Note

The numbers on the REPLENISHMENT TIMER indicate seconds.

[3] Install the new REPLENISHMENT TIMER.

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